REPORT RESUMES

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ATTITUDES TOWARD DE FACTO SEGREGATION IN A NORTHERN CITY.
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A SURVEY WAS CONDUCTED OF OPINIONS HELD BY ADULT CITIZENS OF BERKELEY, CALIFORNIA, CONCERNING RECOMMENDATIONS FOR SCHOOL INTEGRATION MADE BY A DE FACTO SEGREGATION STUDY COMMITTEE. QUESTIONNAIRES WERE ADMINISTERED TO A STRATIFIED-CLUSTER SAMPLE OF 936 ADULTS. THE RESULTS WERE PRESENTED IN TWO SECTIONS (1) DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS OF THE SAMPLE POPULATION AND (2) ATTITUDES, AS REPORTED, OF THE RESPONDENTS TOWARD THE RECOMMENDATIONS MADE IN THE STUDY REPORT. GENERAL CONCLUSIONS WERE THAT (1) SCHOOL BOUNDARY CHANGES TO ACHIEVE RACIAL BALANCE WERE ACCEPTABLE TO A MAJORITY OF ADULTS BUT WOULD MEET SIGNIFICANT OPPOSITION FROM SOME ESTABLISHED WHITE MEMBERS OF THE COMMUNITY, (2) PROGRAMS FOR THE DISADVANTAGED WERE ACCEPTABLE AND GIVEN DEFINITE SUPPORT BY THE COMMUNITY AT LARGE, AND (3) REDUCTION OF ABILITY GROUPING (PLACEMENT OF CHILDREN IN CLASSES ACCORDING TO THEIR ACHIEVEMENT RATING) TO ACHIEVE RACIAL BALANCE IN THE CLASSROOM WAS NOT SUPPORTED. (RS)

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ATTITUDES TOWARD DE FACTO SEGREGATION
IN A NORTHERN CITY

Cooperative Research Project No. 5-8005-2-12-1

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University of California
Berkeley 4, California

1964 - 1965

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TABLE OF CONTENTS

PAGE

I. Introduction -- 1
Race composition of the study community --------------- 3
Historical background leading to the survey ----------- 5
Recommendations of the study committee ---------------- 10
History following the presentation of the de facto segregation study committee report --------------- 14
The questionnaire used in the survey to determine what the opinions of the public were concerning the recommendations --------------------------------- 18
Community characteristics ----------------------------- 38
Results and analysis ---------------------------------- 52

II. Section one: Demographic and socio-economic characteristics of the sample members ------------- 57
Question one -- 57
Question two -- 60
Question three -- 64
Question four --- 70
Question five --- 70
Question six -- 72
Question seven -- 76
Question eight -- 82
Question nine --- 82
Question ten -- 88
Question eleven --------------------------------------- 91
Question twelve --------------------------------------- 94
Question thirteen ------------------------------------- 97

III. Section two: Attitudes of the sample members toward the recommendations ----------------------------- 101
Question fourteen ------------------------------------- 101
Question fifteen -------------------------------------- 112
Question sixteen -------------------------------------- 121
Question seventeen ------------------------------------ 128
Question eighteen ------------------------------------- 135
Question nineteen ------------------------------------- 137
Question twenty --------------------------------------- 141
Question twenty-one ----------------------------------- 148
Question twenty-two ----------------------------------- 158
Question twenty-three --------------------------------- 158

PAGE

IV. Conclusions

Section one: Demographic and socio-economic characteristics of the sample members ---------- 167
Section two: Attitudes of the sample members toward the recommendations ---------- 170
General Conclusions ---------- 175

V. Appendix A: Response rates to mail surveys and their connection to the type of appeal made in the introductory letter sent with the questionnaire

Introduction ---------- 1
Experimental design ---------- 3
Method and analysis and results ---------- 4
Discussion ---------- 11
Summary and implications for future surveys ---------- 15
Citizenship appeal letter ---------- 18
Scientific appeal letter ---------- 19
Long follow-up letter ---------- 20
Short follow-up letter ---------- 21

VI. Appendix B: Large sample multiple comparisons

Introduction ---------- 1
Example one: Multiple comparisons among the correlation coefficients of K independent bivariate normal populations ---------- 3
Example two: Multiple comparisons among the parameters of K independent binomial populations ---------- 7
Example three: Multiple comparisons among the interaction measures among K independent contingency tables (after Goodman) ---------- 11
Example four: Multiple comparisons among the parameters of K independent normal populations--equality of variances not assumed ---------- 15
Example five: Multiple comparisons among the differences between K sets of paired normal populations--analysis of variance interaction test for a 2 x K design--equality of variances not assumed ---------- 18
Derivation of the test statistic ---------- 22
References ---------- 25

VII. Appendix C: A northern urban community's attitudes toward racial imbalances in schools and classrooms

Introduction ---------- 1
Historical background prior to the survey ---------- 3
The survey design ---------- 4
Results ---------- 5
Reduction of racial imbalances of neighborhood schools by changing school boundaries ---------- 6

PAGE

Part I: Analysis based on 1960 census reports and recent census tract voting records ---------------- 6
Part II: Analysis based on items appearing on the questionnaire -------------------------------------- 10
Reduction of racial imbalances in the classrooms by changing ability grouping procedures -------------- 14
Part III: Analysis based on 1960 census reports and recent voting records ---------------------------- 14
Part IV: Analysis based on items appearing on the questionnaire -------------------------------------- 15
Discussion -- 18
Footnotes --- 26

INDEX OF TABLES

TABLE NO. PAGE

1 Population of Berkeley, California by race--census years 1900 to 1960 ---------- 4
2 Strata size and work sheet for determining strata sample size ---------- 35
3 Classification of sample by informant group ---------- 39
4 Demographic and socio-economic characteristics of the 28 census tracts based upon the 1960 census reports and registrar of voter reports ---------- 44
5 Correlation coefficient matrix for principal component analysis ---------- 48
6 Principal component factor loadings ---------- 49
7 Value and level of the three principal components for each of the 28 census tracts ---------- 51
8 Sex distribution of the informants according to the wave of response ---------- 58
9 Proportion of male informants, proportion of adult males at 1960 census, and corresponding Chi-square for each of the 28 census tracts ---------- 59
10 Age distribution of the informants according to the wave of response ---------- 61
11 Observed age distribution of the informants compared to the expected age distribution based on the 1960 census data ---------- 62
12 Median age of informants, median age of adults at 1960 census, and corresponding Chi-square value for each of the 28 census tracts ---------- 65
13 Racial composition of the informants according to the wave of response ---------- 66
14 Proportion of white informants, proportion of adult whites at 1960 census, and corresponding Chi-square value for each of the 28 census tracts ---------- 68
15 Homeowner status of the informants according to the wave of response ---------- 71
16 Proportion of homeowners among the informants, proportion of homeowners in the 1960 census, and corresponding Chi-square value for each of the 28 census tracts -- 73
17 Years lived in Berkeley by informants according to the wave of response ---------- 74
18 Median years lived in Berkeley by informants for each of the 28 census tracts ---------- 75
19 Years lived in Berkeley by informants according to race 77
20 Voter registration of the informants according to the wave of response ---------- 80
21 Proportion of informants registered to vote, for each of the 28 census tracts ---------- 81
22 Voting behavior of the informants in the 1960 presidential election according to the wave of response 83

TABLE NO. PAGE

23 Proportion of informants who voted in the 1960 presidential election for each of the 28 census tracts 84
24 Voting behavior of the informants in the 1960 municipal election for mayor according to the wave of response -- 86
25 Percent "yes" vote for passage of the fair housing act and the proportion of informants who said they voted in the 1963 municipal election, for each of the 28 census tracts -------------------------------- 87
26 Proportion of informants with relatives in the Berkeley public school system according to the wave of response -- 89
27 Proportion of informants with relatives in the Berkeley public school system, for each of the 28 census tracts --- 90
28 Amount of education of the informants according to the wave of response -------------------------------- 92
29 Amount of completed education of the informants for each of the 28 census tracts -------------------------- 93
30 Type of education in Berkeley public schools by the informants according to the wave of response ------ 95
31 Proportion of informants schooled in communities other than Berkeley for each of the 28 census tracts ---- 96
32 Informant's knowledge about the "De Facto Segregation in Berkeley Public Schools" report according to the wave of response -------------------------------- 98
33 Informant's knowledge about the "De Facto Segregation in Berkeley Public Schools" report for each of the 28 census tracts -------------------------------- 99
34 Knowledge of the informants about the de facto segregation study report, according to the first principal component ------------------------------ 100
35 Agreement with the recommendation to change elementary school boundaries according to the wave of response (question fourteen) ------------------------------ 102
36 Agreement with the recommendation to change elementary school boundaries for each of the 28 census tracts 105
37 Question 14--Percent agreeing to the recommendation to change elementary school boundaries, according to the respondents' characteristics ------------------ 107
38 Question 14--Interaction of respondents' characteristics and their classification on the first principal component --- 109
39 Agreement with the recommendation to change junior high school boundaries, according to the wave of response (question fifteen) ------------------------------- 113
40 Agreement with the recommendation to change junior high school boundaries for each of the 28 census tracts 114

TABLE NO. PAGE

41 Question 15--Percent agreement to the recommendation to change junior high school boundaries, according to the respondent's characteristics ------- 115
42 Question 15--Interaction of respondents' characteristics and their classification on the first principal component -- 116
43 Consistency of attitude toward changing elementary and junior high school boundaries -------------------- 118
44 Agreement with the recommendation to permit limited open enrollment according to the wave of response (question sixteen) -------------------------------- 122
45 Agreement with the recommendation to permit limited open enrollment for each of the 28 census tracts ------- 124
46 Question 16--Percent agreeing to the recommendation to permit limited open enrollment, according to the respondents' characteristics --------------------- 125
47 Question 16--Interaction of respondents' characteristics and their classification on the first principal component -- 127
48 Agreement with the recommendation to reduce the number of ability groups, according to the wave of response (question 17) ------------------------------------- 129
49 Agreement with the recommendation to reduce the number of ability groups for each of the 28 census tracts 131
50 Question 17--Percent agreeing to the recommendation to reduce the number of ability groups, according to the respondents' characteristics ----------------- 133
51 Question 17--Interaction of respondents' characteristics and their classification on the first principal component -- 134
52 Agreement with the recommendation to give special training to all children who need extra help, according to the wave of response (question eighteen) -- 136
53 Agreement with the recommendation to give special training to all children who need extra help for each of the 28 census tracts --------------------- 138
54 Question 18--Percent agreeing to the recommendation to give special teaching to all children who need extra help, according to the respondents characteristics --- 139
55 Agreement with the recommendation to hire more teachers of minority races according to the wave of response (question nineteen) ------------------------------ 140
56 Agreement with the recommendation to hire more teachers of minority races for each of the 28 census tracts 142
57 Question 19--Percent agreeing to the recommendation to hire more teachers of minority races, according to the respondents' characteristics -------------- 143

TABLE NO. PAGE

58 Agreement with the recommendation to set up more day care centers and nursery schools according to the wave of response (question twenty) ---------------- 144
59 Agreement with the recommendation to set up more nursery schools and day care centers for each of the 28 census tracts -- 146
60 Question 20--Percent agreeing to the recommendation to set up more nursery schools and day care centers, according to the respondents' characteristics ----- 147
61 Agreement with the recommendation to integrate day care centers and nursery schools according to the wave of response (question twenty-one) ----------------- 149
62 Agreement with the recommendation to integrate nursery schools and day care centers for each of the 28 census tracts -- 150
63 Question 21--Percent agreeing to the recommendation to integrate day care centers and nursery schools, according to the respondents' characteristics ----- 151
64 Question 21--Interaction of respondents' characteristics and their classification on the first principal component -- 153
65 Consistency of response to questions 14 and 21 concerning the changing of elementary school boundaries and the integration of nursery schools and day care centers 154
66 Consistency of response to questions 15 and 21 concerning the changing of junior high school boundaries and the integration of nursery schools and day care centers -- 155
67 Consistency of response to questions 20 and 21 concerning the creation of more nursery schools and day care centers and their integration -------------------- 156
68 Agreement with the recommendation to expand the present summer school program to serve all children according to the wave of response (question twenty-two) 159
69 Agreement with the recommendation to expand the present summer school program to serve all children for each of the 28 census tracts --------------------- 160
70 Question 22--Percent agreeing to the recommendation to expand the present summer school program to serve all children, according to the respondents' characteristics ---------------------------------- 161
71 Content of comments made by informants to the controlled de facto segregation survey and to the Berkeley Gazette newspaper poll --------------------------- 164

TABLE NO. PAGE

Appendix A

1 Chi-square analysis of the response rates to the science and citizenship introductory letters according to demographic characteristics of the census tracts as reported in the 1960 census 6
2 Response rates to the introductory letters by 4 levels of the demographic characteristics under test 7
3 Chi-square analysis of the response rates to the short and long follow-up letters according to demographic characteristics of the census tracts as reported in the 1960 census 9
4 Response rates to the follow-up letters by 4 levels of the demographic characteristics under test 10

Appendix B

1 Computations for example one 5
2 Computations for example two 10
3 Computations for example three 14
4 Computations for example four 17
5 Computations for example five 20

Appendix C

1 Percent agreement with the recommendations to change school boundaries and to reduce the number of ability groupings by three levels of some demographic and voting variables 8
2 Percent agreement with the recommendations to change school boundaries and to reduce the number of ability groupings by two levels of some variables reported on in the survey questionnaire 12
3 Percent agreement to changing school boundaries with respect to race, education and homeowner status of the informants by adult ages 16
4 Percent agreement to reducing the number of ability groups with respect to race, education, and homeowner status of the informants by adult age 17

INTRODUCTION

In May 1954, the highest court of the land declared that "separate but equal" education for Negro and white children would, in the future, be considered an unacceptable system for teaching the youth of the nation. Moreover, its decision meant that schools which were once segregated on a de jure basis were suddenly illegal and therefore were being operated under principles contrary to those stated in the Constitution.

The immediate effects that this decision were to have upon the future history of the nation could not have been predicted. What its effects finally were are documented in the newspapers of the nation, and what happened is well known to both school children and their parents in all sections of the country.

Within a few months, the lower courts began to enforce the historic decision of the higher court. In particular, Southern courts began issuing orders and injunctions to school authorities in offending school districts commanding that positive action be taken to desegregate their schools. In some cases these injunctions were instrumental in transforming segregated schools into integrated schools, but often their only effect was to produce boycotts or picketings by parents and children, physical violence and ill will between police and demonstrators, or even the closing of both white and Negro schools.

In the beginning it appeared that the Court's decision applied only to the South, for it was known that the South openly operated separate but equal schools. Later it was to be realized that the North also operated separate but equal schools, usually not by choice, but by practices which made segregated schools a logical consequence. In the South, schools were segregated by law; in the North, schools were segregated by real estate practices and the low economic status of Negro families. The results were, however, the same. In the South, schools were _de jure_ segregated; in the North, schools were _de facto_ segregated.

In the South, the strong pressures to integrate the schools originated in the lower courts and were applied directly upon Southern school boards and superintendents. In the North, corresponding pressures were exerted upon school authorities by individuals and groups of citizens. Frequently, where citizens acted alone to demand better education for Negro children, the individuals appearing before the appropriate school authorities were Negro parents concerned with the education of their own children. Where citizens acted collectively to demand better education for Negro children, the leaders were usually members of the major local civil rights organizations who were concerned with the education of all Negro children. As civil rights leaders soon learned, pressure exerted upon school boards was more effective in producing change when the pressure was applied under the aegis of a civil rights group.

Just as in the South, Northern school boards and superintendents responded to these pressures. In some cases their actions resulted in violence and in others it resulted in peaceful and uneventful integration of the schools. It was the latter that happened when the school board of Berkeley, California took positive steps to integrate its schools.

This report is based upon the experience of this community. However, this is not a life history of the community, its school board, or of its success in integrating its schools. Instead, it is a report about the attitudes and opinions held by the public toward changes contemplated by the Board of Education to effect integration of the Berkeley schools.

RACE COMPOSITION OF THE STUDY COMMUNITY

The magnitude of the de facto segregation problem of Berkeley is easy to illustrate and comprehend by studying the changes in racial composition the community has experienced during the past 60 years. The figures needed for this understanding are summarized in Table 1. In 1900, two percent of the total population was nonwhite with most of that being Oriental, not Negro. In 1940, only six percent of the total population was nonwhite. In 1960, nonwhites accounted for 26 percent of the total population. Even though the nonwhites accounted for about one-fourth of the total population, they accounted for almost one-third of the school age population. Thus, it might be said that nonwhites had become an exceptionally large minority group in the community.

Table 1

Population of Berkeley, California by Race
Census years 1900 to 1960

Total Population

Year	White	Non-white	Percent White	Percent Non-white
1900	12,968	246	98.0	1.9
1910	38,995	1,439	96.3	3.6
1920	54,196	1,840	96.5	3.3
1930	77,508	4,601	94.6	5.6
1940	80,267	5,280	93.9	6.2
1950	96,268	17,537	84.6	15.4
1960	82,131	29,137	73.8	26.2

School Age Population, 5-19 Years

Year	White	Negro	Other	Percent White	Percent Negro	Percent Other
1900	3,923*	18	23	99.0	.5	.6
1910	9,523	68	187	97.4	.7	1.9
1920	12,744	104	245	97.3	.8	1.9
1930	16,980	456	732	93.5	2.5	4.0
1940	14,758	712	526	92.3	4.5	3.3
1950	15,020	2,520	900	81.5	13.7	4.9
1960	16,795	6,060	1,690	68.4	24.7	6.9

* 1900 Census reported racial composition for ages 5-20. 3,923 is 15/16 of the census total.

HISTORICAL BACKGROUND LEADING TO THE SURVEY

The following history is based upon information available in the published minutes of the meetings of the Board of Education and from news reports in the local daily paper.

Events culminating in the integration of Berkeley's de facto segregated schools began in the winter of 1957 when a representative of Americans for Democratic Action asked the Board of Education to improve racial imbalances in the schools by deviating from its policy of assigning children to schools according to geographic school district boundaries. On that occasion, the Board was informed that because of the lack of practical integration in housing in parts of Berkeley, its school system reflected a pattern of segregated schools. As a consequence, this meant that the races were trained in separate schools, and therefore, the education of youth in Berkeley was unequal. One month later, in January 1958, the same argument was made by the Vice-President of the Berkeley Branch of the NAACP in the presentation of a report regarding "racial tension" in the Berkeley Schools. Furthermore, he suggested that the Board appoint a committee to study the problem of segregation in the districts' public schools. Since the argument could not be denied, the Board agreed to appoint a committee to study the problems listed by the NAACP, and it agreed to ask the committee to come up with workable solutions for their problems.

After some delay, the Board selected a committee in

June 1958. The committee consisted of 14 lay members and five professionals from the school district. The committee worked for more than a year in studying segregation problems in the schools. The findings of their study were presented to the Board in October of 1959, almost two years after the initial request of the NAACP.

As a result of the study, the Board had to admit that its schools were de facto segregated; however, the Board took no action to reduce the racial imbalances in the schools.

Instead, the Board studied the report and on its basis made the following policy decisions.

1. The Board adopted a "color blind" attitude in the hiring, promotion, and placing of teachers. Future appointments were to be based solely on qualifications. In particular, race, color, or religion were not to affect the appointment of any person to a teaching position.

2. The Board asked the superintendent to develop programs for improving the achievement of minority group pupils. He was also directed to promote the interschool activities and encourage children of different races to become acquainted with one another. He was asked to establish an inservice training program for teachers that would give them a better understanding of the social, economic, and racial problems which minority groups experience.

Among other things, the Board mailed copies of the report to California colleges and universities requesting that these problems be considered and discussed in their teacher training programs. In addition, copies of the report were sent to the city council, community welfare agencies, churches, civic organizations, etc. The recipients were asked to study the report and express their feelings and opinions to the Board.

To the Board, the "color blind" attitude seemed sufficient since not only did it apply to the hiring and promotion of teachers, but also could be extended to the handling and education of the children in the various schools. The attitude adopted was that the children were Americans. The color of their skin did not render them or their education unequal.

For more than two years it appeared that the racial problems of the school district had been solved, but in May 1962, a member of the Berkeley Branch of the Congress of Racial Equality appeared before the Board to read a report titled "Presentation to the Berkeley Board of Education on De Facto Segregated Schools." The argument was again presented that the Berkeley schools were segregated even though the Board was doing all it felt necessary to insure the best education for all children in the school system. Again the argument was made that separate education means unequal education, and just as the NAACP before had done, CORE asked the Board to make a complete study of the segregation problems existing in the schools and to come up with some workable solutions. In particular, CORE wanted this new committee to address itself to the following instructions.

The committee should establish criteria as to what is and what is not de facto segregation in Berkeley. After the criteria were established, the committee should determine to what extent the schools of Berkeley were de facto segregated. Once this was accomplished, the committee should determine which factors create and perpetuate de facto segregation in the school district.

The committee was further advised to pay close attention to the effects that de facto segregation had on students as present and future creative citizens in the society and to determine how it was related to the motivation, the academic excellence, and the delinquency of Berkeley's school children. The committee was to investigate and formulate additional proposals for raising the educational and vocational aspirations of able students from economically and socially deprived groups and in schools of low achievement levels. Finally, and most important, the committee was to formulate a program that the School Board could use for the elimination of de facto segregation in the Berkeley public school system.

The rank and file membership of CORE was convinced that the schools were de facto segregated, but in order to prove this they had the foresight to recommend that the committee direct its first action to the establishment of criteria. After the criteria were established, CORE was certain that the committee would be compelled to conclude that the schools were de facto segregated, and school integration and better education for

Negro children would follow.

The Board again agreed to appoint a committee to make the study. As before, the appointment of the committee was not immediate since the Board was in a continual turmoil over the resignation and appointment of its members. In addition, it appears that the Board was somewhat hesitant to change since it already had a workable solution in its "color blind" policy. Yet pressure continued to be exerted on the Board. In September, representatives of CORE, the NAACP, the Berkeley Political Action Committee, the Bay Area Urban League, the Alameda County Democratic Central Committee, the Berkeley Society of Friends, the Community Welfare Commission, the League of Women Voters of Berkeley, the Berkeley Federation of Democratic Clubs, and individual citizens of the community urged the Board to make the study and to appoint a committee. Finally, in December 1962, the Board appointed 35 citizens to constitute a study committee.

One month later the committee was told by the President of the School Board that an unequal distribution of the races existed in most of the city's schools. The committee was told to determine how this unequal distribution of the races affected the local education program and to recommend how any detrimental effects could be minimized or eliminated. For the most part, the committee was instructed to determine the relationship between the racial composition of the schools and the relative performance of minority group students and Caucasian students;

i.e., they were told to determine whether separate education is unequal education, at least according to preassigned criteria which they had to establish.

Eleven months later, in November 1963, the De Facto Segregation Study Committee (as it had come to be named) presented its report to a large audience in the auditorium of one of the junior high schools. Within a few days, opposition to the recommendations made by the committee was being expressed in the local newspaper, both by the editors and citizens writing to the editors.

RECOMMENDATIONS OF THE STUDY COMMITTEE

After some deliberation, the Committee adopted the following definition of de facto segregation. "A school whose white-nonwhite ratio differs significantly from the same ratio of the District as a whole will be said to be a de facto segregated school." With this definition, it was not difficult for the Committee to conclude that the schools of the community were de facto segregated. The Committee further decided that the neighborhood school concept as applied in Berkeley had produced its de facto segregated schools. Having made the decision that the schools were segregated, the committee made its study and then offered its recommendations. While many of the recommendations were somewhat specific to Berkeley, their general nature is not. Instead of stating the specific recommendations made by the Committee, some have been rephrased and placed in a context which may be of some interest and utility to other school districts.

The recommendations concentrated on four general sources of difficulty. These were: Compensatory education for the culturally deprived; changing school boundaries to correct racial imbalances; promotion of understanding between students and staff; and major changes in administrative policy. The major recommendations are summarized here.

I. Recommendations concerned with compensatory education programs for the culturally deprived:

   1. The schools should take all possible means available to them to reach the disadvantaged child at the preschool and kindergarten level with materials designed to provide the necessary background for school achievement.
   2. Day care centers and nursery school programs should be greatly enlarged and attendance should be on a basis which assures widely representative racial and ethnic distributions at every school
   3. The summer school program should be expanded so that all children may have the opportunities of receiving additional instruction. This should apply to gifted, regular, retarded, and culturally deprived children.
   4. A substantial compensatory education program should be put into effect with smaller class sizes, remedial reading sections, parent education, interschool

activities, etc.

5. Because of the importance of the relationship between the disadvantaged child and his school environment, there should be an increase in the number of guidance consultants on the District staff.
6. Library facilities should be greatly improved in the schools to increase the opportunities for students to learn through individual reading and professional assistance.

II. Recommendations concerned with changing school boundaries to achieve racial balances:

1. Elementary school attendance area boundaries should be altered or redrawn along general lines to rectify racial imbalances in as many schools as possible.
2. A voluntary limited open enrollment elementary school plan should be started for schools which cannot be integrated by changing school boundaries. This enrollment plan should enable some children from low SES areas to go to school in high SES areas and vice versa. However, application for transfer should be accepted only if it promotes integration.
3. Racial imbalances at the Junior High Schools should be corrected by changing school boundaries.

III. Recommendations concerned with the promotion of understanding between students and staff members:

1. Racial understanding among the students in the

high school should be improved. The Board should provide a person trained and experienced in intergroup relations to help students to organize and conduct their activities more effectively.

2. Successful members of minority groups should be invited to visit classes and to speak before assemblies.
3. Social clubs should be discouraged but interest and service groups should be encouraged.
4. Lockers should be assigned according to home rooms in an alphabetical order, to prevent racial cliques from forming, etc.

IV. Recommendations concerned with administrative practices to improve the academic achievement and adjustment of students:

1. The Board of Education should adopt a policy of "color consciousness" instead of a policy of being "color blind."
2. The Board should increase the flexibility of ability grouping and tracking to reduce the problem of segregated classes within integrated schools.
3. The counseling of students should be done on the basis of ability and ambition rather than on the basis of assumed employment opportunities.
4. The system of hiring teachers should give enhanced consideration to qualified teachers of minority races, without any reduction of standards until a

racially representative teaching staff of excellent quality is attained.

HISTORY FOLLOWING THE PRESENTATION OF THE DE FACTO SEGREGATION STUDY COMMITTEE REPORT

The local newspaper presented a two page summary of the report and printed a confidential ballot requesting the opinions of its readers on the most controversial recommendations made by the study committee. In the meantime, they reproduced 14,000 copies of the completed report which they distributed throughout the community to interested citizens. Because they received an unusually large amount of mail concerning the recommendations, they presented on three consecutive days, "randomly selected" comments from 303 of the questionnaires returned by their readers. In January 1964, the results of the "confidential poll" were printed. The poll contained only four questions that could be answered with a simple yes or no. The questions concerned three of the recommendations made by the study committee. These recommendations concerned changes to induce limited open enrollment at schools with high racial imbalances, changes in school boundaries to improve the racial balances in as many schools as possible, establishment and extension of present compensatory education programs for the culturally deprived. The fourth question asked what the readers thought of the study report as a whole. The questions and the results were as follows.

1. If I could vote only on the recommendation in the

report which advocated "limited open enrollment" I would vote:

Yes 28.4 percent No 71.6 percent

2. If I could vote only on the recommendation for redistricting of school boundaries as outlined in the report, I would vote:

Yes 20.0 percent No 80.0 percent

3. If I could vote only on the recommendation for compensatory education concept as embodied in the report, I would vote:

Yes 41.3 percent No 58.7 percent

4. If I were asked to vote yes or no on the entire report as it has been submitted to the Board of Education, I would vote:

Yes 19.6 percent No 80.4 percent

More than 60 percent of the "no" ballots were returned with comments while only 24 percent of the "yes" ballots were returned with comments. However, no mention was ever made of the number of ballots returned to the editors nor was there a study made of the source of the letters within the community. However, the editors did say the poll exceeded their expectations in that the total number of returned ballots was about five times as great as a newspaper expects in any mail poll.

The editors were impressed by the results but they were not willing to make any special claim for them. Apparently, they just wanted to report what their readers told them and whether or not the information was obtained from a biased and self selective sample of opponents to the recommendations did not seem to bother them.

As one might expect, the report was read in detail by many groups, and the PTA at two of the upper socio-economic status schools in the community took their own polls. One of them sent a nine page questionnaire to 450 parents of the school. Because of the large interest generated in the community by the report, 78 percent returned completed questionnaires. Of the informants, 92 percent were against the proposed Junior High School redistricting; 83 percent thought that funds should be found to make smaller classes; 89 percent favored remedial reading programs for underachievers; 74 percent were willing to tax themselves by increased property taxes for a fair and workable compensatory education program, 57 percent favored the recommendation to reduce the number of ability groupings; 56 percent preferred greater inter-racial contact at school for their children; and 72 percent favored the open enrollment plan proposed by the committee.

Results from the survey made at the other high SES school were quite different from those noted above: 34 percent favored the recommended redistricting program; 47 percent favored the changes in ability grouping suggested by the committee; and 75 percent favored the limited open enrollment plan proposed by the committee.

Three "independent" polls with conflicting results meant only confusion. Since these polls represented the upper SES areas of the community, no one knew what the Average Citizen thought about the recommendations. Even more important is that Negroes had not voiced any opinions. Conceivably, as a group, they did not know what was happening.

For these reasons, it seemed advisable to carry out a statistically controlled poll and to determine what the entire community thought about the recommendations made by the study committee. Certainly, if the school board knew what the public thought, its decision making processes could have been easier. In any case, it would know if the public favored the recommendations or if it was against them.

The request to make the survey was made in February 1964 through the Assistant Superintendent, since the Superintendent was attending an education convention on the East Coast. The immediate reaction by the Assistant Superintendent was that the Board would not approve the survey since money had not been put aside to pay for its operation. Financial assistance was then sought from a number of unrelated sources and when it was obtained the Board was again approached through the Superintendent who was now back in the community. On April 7, the Board approved the taking of the survey.

Because of its minimal cost and simplicity of operation, a mail questionnaire was decided upon to assess the public's thought about some of the recommendations. For this reason, it was important to make the questionnaire as short as possible, so that a maximum response would be obtained. This meant that some items of interest had to be omitted. In addition, since it was known that a large part of the population reads at lower than a 6th grade level, it was decided to pitch the questionnaire language and vocabulary at as low a level which could be tolerated without insulting the intelligence and ability of people reading at a much higher level. For this reason, some of the questionnaire language appeared to be strained. Later experience proved that this was a wise decision, since one of the paid interviewers reported that a number of people from low SES areas in the community looked at the questionnaire and failed to understand it, even with the simple language which was employed. It is not difficult to imagine the reduction in response rate which would have resulted from using a questionnaire with more sophisticated language and construction.

It was further believed that many of the low SES individuals might not have heard of the report, and therefore it seemed to be necessary to give some small explanations for some of the questions so that a partially intelligent answer could be given. As it turned out, a surprisingly large number of informants had heard of the report or had read it.

THE QUESTIONNAIRE USED IN THE SURVEY TO DETERMINE WHAT THE OPINIONS OF THE PUBLIC WERE CONCERNING THE RECOMMENDATIONS

The questionnaire sent to all sample members follows.

Directions: Please finish the following statements by checking the one answer that makes it right for you.

Example: I live in

(1) ___ Oakland
(2) _✓_ Berkeley
(3) ___ Alameda
(4) ___ San Francisco

Begin here:

I am

(1) ___ Male
(2) ___ Female

My age is between

(1) ___ 21 - 29
(2) ___ 30 - 39
(3) ___ 40 - 49
(4) ___ 50 - 59
(5) ___ 60 - 69
(6) ___ 70 or over

I am

(1) ___ White
(2) ___ Negro
(3) ___ Oriental
(4) ___ Other

Including myself, the number of people 21 years of age and over who live in my home is

(1) ___ One
(2) ___ Two
(3) ___ Three
(4) ___ Four
(5) ___ If more than four, how many ___?

This home is

(1) ___ Owned by us
(2) ___ Rented by us
(3) ___ Other

I have lived in Berkeley for

(1) ___ Less than one year
(2) ___ 1 to 5 years
(3) ___ 6 to 10 years
(4) ___ More than 10 years

At this time

(1) ___ I am not registered to vote in Berkeley
(2) ___ I am registered to vote in Berkeley

In the 1960 Presidential election

(1) ___ I voted
(2) ___ I did not vote
(3) ___ I do not remember

In the 1963 City election for Mayor

(1) ___ I voted
(2) ___ I did not vote
(3) ___ I do not remember

I have relatives (students, teachers, and other employees) in the Berkeley Public Schools.

(1) ___ No
(2) ___ Yes

The highest grade (or years) of school I have had is

(1) ___ None
(2) ___ Grade school for ___ years
(3) ___ High school for ___ years
(4) ___ College for ___ years

I went to the Berkeley Public Schools during

(1) ___ Both my high school and grade school years
(2) ___ My high school years only
(3) ___ My grade school years only
(4) ___ No time (I went to school at another place)

The Berkeley Board of Education asked a citizens' committee to report on the chances that children of all races have for a good education in the public schools of Berkeley. The report was called "De Facto Segregation in the Berkeley Public Schools." I have

(1) ___ Not heard about the report
(2) ___ Heard about the report but have not read it
(3) ___ Read the report

This committee suggested that new boundary lines be made for school districts. The committee said that the new lines would produce more schools and classrooms with children of all races. Some of their suggestions for "integrating" the schools are below.

For some grade schools, the committee suggested that lines be changed so that the percentage of non-white and white children in these schools would be more like the percentage for the entire school system.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

For Garfield and Burbank Junior High Schools, the committee suggested that school lines be changed so that the percentage of non-white and white children in these schools would be more like the percentage for the entire school system.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

For schools that cannot be completely integrated by changing boundary lines, the committee suggested a system of "limited open enrollment." This means that whenever there are openings, non-white children may go to

Emerson from Lincoln
Thousand Oaks from Jefferson
Cragmont or Oxford from Columbus
Hillside or Whittier from Longfellow

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

Now Berkeley schools divide children into classes on the basis of how well they did in earlier classes. This sometimes leads to racial segregation in the classrooms. The committee suggested fewer "ability groupings" be used. This would cut down on segregation and would produce classes with children who have a larger range of ability.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

The committee made other suggestions to give better education for all of the children of Berkeley, regardless of race. These suggestions apply to both non-white and white children.

The committee suggested that special teaching be given to all school children who need extra help.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

The committee suggested that additional qualified teachers of minority races who are qualified be hired until good teachers of all races are teaching in all schools.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

The committee suggested that more day-care centers and nursery schools be set up to let more children attend.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

If more day-care centers and nursery schools are set up, the committee suggested that they be set up to permit a greater integration of the races than is found at present.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

The committee suggested that the present summer school program be expanded to serve all children.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

Do you have any comments you wish to make? If so, please write them on another sheet of paper and include them with the questionnaire in the provided return envelope.

The questionnaires were mailed to the public on April 15. Two weeks later the follow-up letters were sent to all non-respondents. Two weeks after the second mailing, interviews were made with about one-third of the non-respondents. On May 19, 1964, the survey was terminated.

It should be mentioned that an introductory letter designed to inform the public about the purposes of the survey was included with each questionnaire mailed to the sample members. One-half of the letters contained an appeal suggesting that response to the questionnaire was a sign of good citizenship. For the remaining half of the sample, an appeal was made suggesting that response to the questionnaire was of help in making a scientific study of the de facto segregation problem in Berkeley. It was thought that response rates could be affected by the type of appeal made in the first contact with the survey.

In addition, two different letters were used in the follow-up. One letter was brief. The second letter was somewhat longer. It was thought that response rates could be affected by the length of the follow-up letter.

Since these "experiments" have no direct bearing on the survey and its result, these conditions are not mentioned or discussed in the latter parts of this report. Analysis of the results for these two experiments is presented in Appendix A.

DETERMINATION OF SAMPLE SIZE

As a starting point in the determination of the sample size to use for the survey, an evaluation was made of the objectives of the survey and of the questions to be put before the public to answer. The objective was to determine what the public thought about some of the recommendations offered by the study committee, and these attitudes were to be assessed by an examination of their responses to the last nine items on the questionnaire. As can be seen by examining these questions, the responses are of an I agree-I disagree type. This meant that Binomial Sampling Theory would be applicable, and that the statistical problem to be considered was that of estimating the proportion of adults in the community who agreed with the recommendations.

As is true with all statistical estimation procedures, the determination of the exact value of the proportion of adults favoring the recommendations is impossible unless a complete census of the community is made. In this case, a complete census was out of the question, and therefore it was decided to obtain estimates of the unknown parameters which would not be in error by more than five percent. Since the variables of interest possessed a binomial probability distribution, a 95 percent confidence interval for the unknown value of P (the proportion of adults agreeing with any one of the recommendations) is given approximately by

$$\hat{P} - 2\sqrt{\frac{\hat{P}\hat{Q}}{N}} < P < \hat{P} + 2\sqrt{\frac{\hat{P}\hat{Q}}{N}} \qquad (1)$$

where

P = the unknown value of the proportion of adults who agree with a given recommendation (1a)

$\hat{P}$ = the estimate of P available from the sample (1b)

$\hat{Q} = 1 - \hat{P}$ (1c)

The condition that the estimated value must be within five percent of the true value implies that

$$2\sqrt{\frac{PQ}{N}} \leq .05 \qquad (2)$$

If P were known, this inequality could have been solved for N. However, P was unknown and so it was decided to adopt the strategy that would give a minimum width confidence interval for the value of P that is the most difficult to estimate. As is well known, this occurs when $P = 1/2$. Substituting this value P into the inequality and solving for N, it follows that the minimal sample size required for the survey was 400 adult citizens.

Selecting a random sample from a large population of adults is, for all practical purposes, impossible. According to statistical standards a sampling procedure is said to be random if every adult in the population has the same probability of being drawn into the sample and if the selection is completely independent. To satisfy these conditions, it would have been necessary to have a complete list of all the adults in the population. Naturally, such a list was not available; therefore, other methods were employed in the selection of the sample.

The method actually employed is described in considerable detail in the following paragraphs. As will be noted, a number of approximations were made in planning the sampling procedure. While it cannot be stated with any degree of certainty, it is highly unlikely that these approximations have biased the study in any serious manner. The notation introduced is the same as that used by Cochran in his text, Sampling Techniques, 1963, Wiley and Sons.

In order to simplify the selection of the sample, it was decided to introduce a stratification into the sampling plan. Convenient strata for the study were provided by the 28 census tracts of the community. With these as strata, an estimate of P is given by

$$\hat{P} = \sum_{h=1}^{28} \frac{N_h}{N} \hat{P}_h \tag{3}$$

with variance given by

$$Var(\hat{P}) = \sum_{h=1}^{28} \left(\frac{N_h}{N}\right)^2 \left(1 - \frac{n_h}{n}\right) Var(\hat{P}_h) \tag{4}$$

where

$\hat{P}_h$ = the estimate of P in the h-th strata (4a)

N_h = number of adults in the h-th strata (4b)

$N = \sum_{h=1}^{28} N_h$ = total number of adults in the community (4c)

$Var(\hat{P}_h)$ = the variance of the estimate of the proportion agreeing with the item in the h-th strata (4d)

n_h = the number of adults in the h-th strata sample (4e)

$n = \sum_{h=1}^{28} n_h$ = total number of adults in the sample (4f)

To simplify the formulas, let

$\frac{N_h}{N} = W_h$ = proportion of the population in the h-th strata (4g)

$\frac{n_h}{n} = f_h$ = Proportion of the sample in the h-th strata (4h)

Then

$$Var(\hat{P}) = \sum_{h=1}^{28} W_h^2 (1-f_h) Var(\hat{P}_h) \tag{5}$$

Since the ratio of the strata sample sizes to the total strata size was almost certain to be less than five percent, the factor involving f_h could be ignored in the formula for the variance. With this approximation

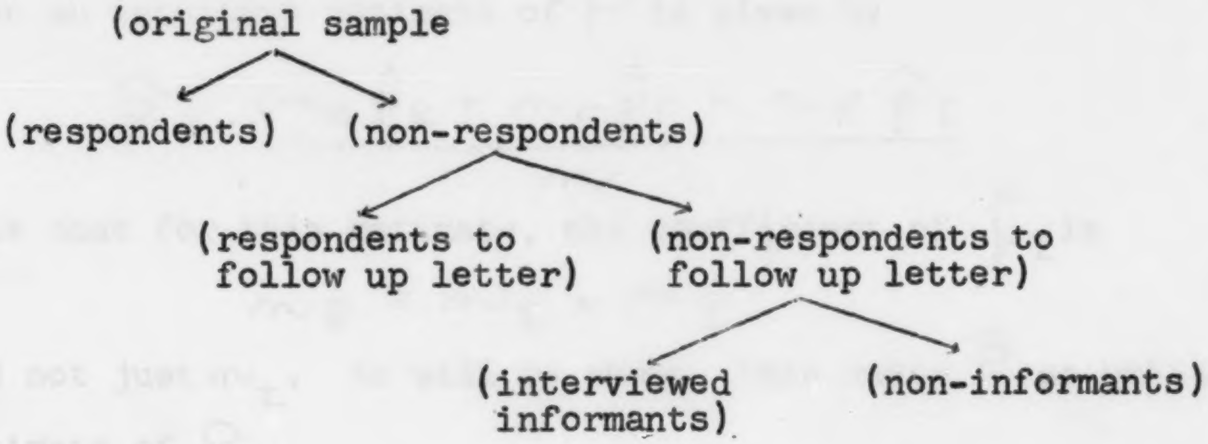
$$Var(\hat{P}) = \sum_{h=1}^{28} W_h^2 \, Var(\hat{P}_h) \tag{6}$$

The values of W_h were determined from 1960 census reports. Unfortunately, there were no immediate estimates of the variances of the estimates within each strata. In order to determine these variances, a simple model was constructed of the way information was to be used in estimating P_h. This model is presented for a typical census tract. To simplify the discussion the subscript h is ignored in what follows.

It was assumed that each census tract consisted of two mutually exclusive subpopulations. One of the subpopulations consisted of adults who responded to mailed questionnaires. The other subpopulation consisted of adults who did not respond to mailed questionnaires. It was further assumed that a random sample of people from these two subpopulations would be selected by the mailing of the questionnaires to a random sample in the entire census tract. This last assumption is not at all unreasonable and there is no loss in making it.

To elevate the response rate, it was decided to send a follow up letter and questionnaire to all non-respondents and to later interview a subsample of the sample members who did not respond to the follow up letter. To complete the model, it was further assumed that the non-respondents consisted of a random sample of adults from two mutually exclusive subpopulations consisting of adults who either respond to follow up questionnaires or who do not. Finally, it was assumed that a random sample of the non-respondents to the follow up letter would be selected and interviewed.

According to these assumptions there would exist in any one census tract a further stratification of the sample according to the following model.


(original sample
(respondents)
(non-respondents)
(respondents to follow up letter)
(non-respondents to follow up letter)
(interviewed informants)
(non-informants)

Let

n = number in original sample (7a)

n_R = number of respondents to the original mailing (7b)

$n_{\bar{R}}$ = number of non-respondents to the original mailing (7c)

n_F = number of respondents to follow up mailing (7d)

$n_{\bar{F}}$ number of non-respondents to follow up mailing (7e)

n_I = number of non-respondents interviewed (7f)

$n_{\bar{I}}$ = number of non-respondents not interviewed (7g)

Then

$$n = n_R + n_{\bar{R}} \tag{8a}$$

$$n_{\bar{R}} = n_F + n_{\bar{F}} \tag{8b}$$

$$n_{\bar{F}} = n_I + n_{\bar{I}} \tag{8c}$$

and

$$n = n_R + n_F + n_I + n_{\bar{I}} \tag{9}$$

Among the n_R respondents, let a_R represent the number who agree to the recommendation. Let a_F and a_I have corresponding meanings among the n_F and n_I individuals. Let

$$\hat{p}_R = \frac{a_R}{n_R}, \quad \hat{p}_F = \frac{a_F}{n_F}, \text{ and } \quad \hat{p}_I = \frac{a_I}{n_I} \tag{10}$$

Then an intuitive estimate of P is given by

$$\hat{P} = \frac{n_R \hat{p}_R + n_F \hat{p}_F + n_{\bar{F}} \hat{p}_I}{n} \tag{11}$$

Note that for this estimate, the coefficient of $\hat{p}_I$ is

$$n_{\bar{F}} = n_I + n_{\bar{I}} \tag{12}$$

and not just n_I. As will be shown, this makes $\hat{P}$ an unbiased estimate of P.

Consider the expected value of $\hat{p}_I$. Within the sample of nonrespondents it is an unbiased estimate of $P_{\bar{F}}$ since it is estimated from a random sample selected from the total set of nonrespondents and since the underlying variable is a binomial variable. Now the substrata size corresponding to this estimate is $n_{\bar{F}}$. Therefore, the expected number of agreements among the nonrespondents is $a_{\bar{F}} = n_{\bar{F}} P_{\bar{F}}$. Thus, within the sample

$$E(\hat{P}|\text{SAMPLE}) = \frac{n_R \hat{p}_R + n_F \hat{p}_F + n_{\bar{F}} P_{\bar{F}}}{n} \tag{13}$$

Next, take the expected value over the census tract. According to assumption, these variables are binomially distributed and therefore

$$E(\hat{P}|\text{CENSUS TRACT}) = \frac{n_R P_R + n_F P_F + n_{\bar{F}} P_{\bar{F}}}{n} \tag{14a}$$

$$= \frac{n_R}{n} P_R + \frac{n_F}{n} P_F + \frac{n_{\bar{F}}}{n} P_{\bar{F}} \tag{14b}$$

With random sampling

$$E\left(\frac{n_R}{n}\right) = \frac{N_R}{N} \quad , E\left(\frac{n_F}{n}\right) = \frac{N_F}{N}, \quad \text{and } E\left(\frac{n_{\bar{F}}}{n}\right) = \frac{N_{\bar{F}}}{N} \tag{15}$$

Therefore

$$E(\hat{P}) = \frac{N_R}{N} P_R + \frac{N_F}{N} P_F + \frac{N_{\bar{F}}}{N} P_{\bar{F}} \tag{16}$$

Since

$$A_R = N_R P_R \, , \quad A_F = N_F P_F \, , \quad \text{and } A_{\bar{F}} = N_{\bar{F}} P_{\bar{F}} \tag{17}$$

$$E(\hat{P}) = \frac{A_R + A_F + A_{\bar{F}}}{N} = \frac{A}{N} \pm P \tag{18}$$

The variance of this estimate is given by

$$Var(\hat{P}) = \left(\frac{n_R}{n}\right)^2 Var(\hat{P}_R) + \left(\frac{n_F}{n}\right)^2 Var(\hat{P}_F) + \left(\frac{n_{\bar{F}}}{n}\right)^2 Var(\hat{P}_I) \tag{19}$$

To simplify the selection of the sample within a strata it was decided to use a cluster sampling procedure. In particular, it was decided to sample households and then take a complete count of all adults in the household. In general, such a procedure tends to increase the variance of an estimate since responses for the members within a given household tend to be the same. While the magnitude of the increase could not be specified with any high degree of confidence, it was decided to act as though it would increase the standard deviations for all categories by a factor of 1.5. This implies that

$$Var(\hat{P}_R) = (1.5)^2 \frac{P_R Q_R}{n_R} = 2.25 \frac{P_R Q_R}{n_R} = \frac{9 P_R Q_R}{4 n_R} \quad (20a)$$

$$Var(\hat{P}_F) = (1.5)^2 \frac{P_F Q_F}{n_F} = 2.25 \frac{P_F Q_F}{n_F} = \frac{9 P_F Q_F}{4 n_F} \quad (20b)$$

$$Var(\hat{P}_I) = (1.5)^2 \frac{P_I Q_I}{n_I} = 2.25 \frac{P_I Q_I}{n_I} = \frac{9 P_I Q_I}{4 n_I} \quad (20c)$$

As with simple random sampling, these variances are maximized for $P = Q = 1/2$. Thus,

$$\max Var(\hat{P}_R) = \frac{9}{16 n_R} \quad (21a)$$

$$\max Var(\hat{P}_F) = \frac{9}{16 n_F} \quad (21b)$$

$$\max Var(\hat{P}_I) = \frac{9}{16 n_I} \quad (21c)$$

Therefore

$$\max Var(\hat{P}) = \left(\frac{n_R}{n}\right)^2 \frac{9}{16 n_R} + \left(\frac{n_F}{n}\right)^2 \frac{9}{16 n_F} + \left(\frac{n_F}{n}\right)^2 \frac{9}{16 n_F} \quad (22)$$

$$\max \mathrm{Var}(\hat{P}) = \frac{9}{16n^2}\left[n_R + n_F + \frac{n_{\bar F}^2}{n_I}\right] \qquad (22a)$$

At one point in the planning of the survey it was decided to interview one-half of the non-respondents. This meant that $n_I = \frac{1}{2} n_{\bar F}$, and therefore

$$\max \mathrm{Var}(\hat{P}) = \frac{9}{16n^2}\left[n_R + n_F + 2n_{\bar F}\right] \qquad (23a)$$

$$= \frac{9}{16n^2}\left[n_R + n_{\bar F} + n_F\right] + \frac{9}{16n^2} n_{\bar F} \qquad (23b)$$

$$= \frac{9}{16n^2} \cdot n + \frac{9}{16n^2} n_{\bar F} \qquad (23c)$$

$$= \frac{9}{16n} + \frac{9}{16n^2} n_{\bar F} \qquad (23d)$$

$$= \frac{9}{16n} + \frac{18}{16} \frac{n_I}{n^2} \qquad (23e)$$

A 30 percent response to the first letter with a ten percent response to the second letter seemed reasonable at the time. This meant that one-half of 60 percent or 30 percent of the sample would be interviewed and that $n_I = \frac{3}{10} n$. Consequently

$$\max \mathrm{Var}(\hat{P}) = \frac{9}{16n} + \frac{18}{16} \frac{3n}{10n^2} \qquad (24a)$$

$$= \frac{9}{16n} + \frac{54}{160n} \qquad (24b)$$

$$= \frac{144}{160n} \tag{24c}$$

$$= \frac{9}{10n} \tag{24d}$$

Recalling that this result refers to one census tract, it then follows that over all 28 census tracts, that

$$\max Var(\hat{P}) = \sum_{h=1}^{28} W_h^2 \frac{9}{10n_h} = \frac{9}{10}\sum_{h=1}^{28} W_h^2 \frac{1}{n_h} \tag{25}$$

To further simplify the selection of subjects and to produce self-weighting samples it was decided to choose samples proportional to census tract size. This meant

$$W_1 = \frac{n_1}{n},\ W_2 = \frac{n_2}{n},\ \cdots,\ W_{28} = \frac{n_{28}}{n} \tag{26}$$

and therefore

$$\max Var(\hat{P}) = \frac{9}{10}\sum_{h=1}^{28}\left(\frac{n_h}{n}\right)^2 \frac{1}{n_h} \tag{27a}$$

$$= \frac{9}{10n^2}\sum_{h=1}^{28} n_h \tag{27b}$$

$$= \frac{9}{10n^2}\, n \tag{27c}$$

$$= \frac{9}{10n} \tag{27d}$$

Thus, for a 95 percent confidence interval with maximum half width of five percent it becomes necessary to solve the following equation for n.

$$2\sqrt{\frac{9}{10n}} \leq .05 \qquad (28a)$$

$$\frac{36}{10n} = \frac{1}{400} \qquad (28b)$$

$$n = \frac{400 \times 36}{10} = 1400 \qquad (28c)$$

As a final decision, it was decided to continue the planning of the survey with the selection of 1,400 sample members. Since a number of approximations and estimations had been made, this extra adjustment did not seem unduly harmful. With $N = 1{,}400$ the maximum expected variance for each question was .000643 so that the expected maximum standard error for each estimate would be less than .0253.

The determination of the exact sample sizes employed in each strata was based on the frequencies of adults reported in the 1960 census reports for the community. The basic data required to determine the number of households per census tract to sample is shown in Table 2. Figures for census tract 1A are used to show how the sample size was determined.

The number of occupied households reported in the 1960 census was 1,129 with 2,274 adults. Of the total adult population counted in 1960, .0304 lived in tract 1A. Therefore, to satisfy the proportional sampling condition, the number of adults needed in tract 1A was .0304 of 1,400 or 43 adults. Within tract 1A the average number of adults per household

Table 2

Strata Size and Work Sheet for Determining Strata Sample Size

Census Tract	Number of Adults		Sample Size	Number of Households	Mean Number of Adults per Household	Number of Houses Required	Number of Households Mailed Questionnaire	Number of Adults in Sample
1A	2274	.0304	42.6	1129	2.01	21	24	46
1B	2284	.0305	42.7	1169	1.95	22	24	44
2A	1981	.0265	37.1	1015	1.95	19	18	34
2B	3095	.0413	57.8	1569	1.97	29	30	54
2C	2547	.0340	47.6	1324	1.92	25	24	44
2D	2186	.0292	40.9	1091	2.00	20	24	45
3A	3975	.0531	74.3	2217	1.79	42	42	55
3B	3032	.0405	56.7	1717	1.77	32	30	55
3C	3842	.0513	71.8	2263	1.70	42	42	70
3D	3365	.0449	62.9	1787	1.88	33	36	61
3E	1443	.0193	27.0	703	2.05	13	18	30
4A	2697	.0360	50.4	1439	1.87	27	30	54
4B	3172	.0424	59.4	1700	1.87	32	30	52
4C	4195	.0560	78.4	2268	1.85	42	42	86
4D	2352	.0314	44.0	1228	1.92	23	24	48
4E	3620	.0484	67.8	1970	1.84	37	36	67
5A	1492	.0199	27.9	1095	1.36	21	24	31
5BA	3761	.0502	70.3	1651	2.28	31	36	59
5BB	2959	.0395	55.3	1782	1.66	33	30	46
5BC	1582	.0211	29.5	586	2.70	11	12	26
5C	2798	.0374	52.4	1450	1.69	31	30	58
5D	2319	.0310	43.4	1299	1.30	33	24	43
5E	2528	.0338	47.3	1598	1.58	30	30	52
6A	1302	.0174	24.4	663	1.96	12	12	25
6B	2592	.0346	48.4	1328	1.95	24	24	46
6C	1510	.0202	28.3	737	2.05	14	18	37
6D	2784	.0372	52.1	1348	2.07	25	24	52
6E	3176	.0424	59.4	1590	2.00	30	30	56
Total	74863	1.0000	1400	39716	1.88	747	768	1393

was 2.01. Therefore the number of households to be included in the sample was 43/2.01, or 21.

Between 1960 and 1964, Berkeley had grown, as most other urban communities had, and to adjust for this it was decided to increase the sample size to the nearest multiple of six so that the number of households sampled in the census tract was 24. This increase, to 24, was also justified or rationalized on the basis of protecting oneself from the possibility that a household might be empty or that the occupants would be difficult to locate because of illness, vacation, employment, etc. Another reason for increasing the sample size to the next highest multiple of six was that it simplified the block sampling. For tract 1A, this was accomplished by selecting four city blocks with probabilities of selection proportional to 1960 block size, where size referred to the number of occupied households. Within each selected block, a random sample of six households was then selected.

The four selected blocks were circled on foot, maps were sketched, and lists were made of the addresses of all households in the block. Random numbers were then assigned to each household and six households were selected. On April 15, 1964, two questionnaires were sent to each household with stamped return envelopes. For record purposes, each envelope was stamped with a fictitious zip code number ranging from 94201 to 94969. As each return came in, it was checked against its code number, it was opened, and the number of adults living in the house was noted. If the number exceeded two, extra questionnaires were mailed to the remaining adults.

Two weeks later follow up letters were sent to all nonrespondents. Finally, all households which failed to respond were contacted by trained interviewers of the Survey Research Center of the University of California. When an interviewer contacted a house, the first question asked was, "How many adults live in the household?" This information was used to determine the size of the sample originally selected.

Considering the crude approximations made in the selection of the sample, it is somewhat remarkable that the final number of houses included in the sample was reduced by only 35 households, so that instead of 768 households being included in the survey, 733 households were ultimately included. Also, the final sample size of 1,393 was only seven less than planned for.

The total response rate could have been higher than that actually obtained since nearly all non-responding households were contacted. However, not all non-respondents were interviewed. At some households, the interviewers left new questionnaires, and made arrangements to either pick up the questionnaires at a later date or else conduct a personal interview with the non-respondents. Of the non-respondents, interviews and questionnaire pickup were made with about 1/3 instead of 1/2 as originally planned. The reasons for the reduction were that funds were lacking at the time of interviewing and that the Board of Education on May 19 held an open Board meeting at which they presented to the community their programs to desegregate the schools. As a result, the survey had to be terminated before information could be obtained from the remainder of the non-respondents.

Information was obtained from adults responding to the original letter, to the follow up letter, and to the interviews. The number of people falling into these informant groups is shown in Table 3. As can be seen, 495, or 36 percent of the sample members responded to the original letter, 226, or 16 percent, responded to the follow up letter, and 215, or 15 percent, were contacted by the interviewers. This produced a total informant rate of 67 percent which was near expectation.

COMMUNITY CHARACTERISTICS

Before one can understand and interpret the results of the survey in a meaningful manner, it is helpful to know some things about the survey community and how certain characteristics of its people can influence or be related to particular responses and attitudes.

According to the Chamber of Commerce, Berkeley is a city with an estimated population of 120,000 people. In 1960, the Census Bureau counted 111,268 residents and in 1950, the Census Bureau counted 113,805. These figures suggest that Berkeley has a static population. However, this is not true since the city undergoes a large and continuous in and out migration. The community is part of the San Francisco Metropolitan Area and

Table 3

Classification of Sample by Informant Group

		Respondents		Non-Respondents		
Census Tract	Sample Size	Original Letter	Follow-up Letter	Interview	Never Reached	Informant Rate
1A	46	9	9	6	22	52.2
1B	44	11	3	15	15	65.9
2A	34	8	6	11	9	73.5
2B	54	7	11	16	20	63.0
2C	44	8	7	22	7	84.1
2D	45	3	4	20	18	60.0
3A	55	14	6	21	14	74.5
3B	55	19	8	1	27	50.9
3C	70	30	11	4	25	64.3
3D	61	28	10	2	21	65.6
3E	30	8	9	0	13	56.7
4A	54	11	7	20	16	70.4
4B	52	14	7	9	22	57.7
4C	86	29	12	8	37	57.0
4D	48	12	8	5	23	52.1
4E	67	23	4	19	21	68.6
5A	31	13	5	0	13	58.1
5BA	59	26	13	9	11	81.4
5BB	46	20	9	0	17	63.0
5BC	26	12	7	1	6	76.9
5C	58	27	15	5	11	81.0
5D	43	32	2	2	7	83.7
5E	52	17	4	9	22	57.7
6A	25	16	5	1	3	88.0
6B	46	25	8	3	10	78.3
6C	37	9	14	0	14	62.2
6D	52	29	5	4	14	73.1
6E	56	33	11	2	10	82.1
Unknown	17	2	6	0	9	
Total	1393	495	226	215	457	67.4

is located between the shores of San Francisco Bay and the hills and mountains which line the Pacific Coast. The regions close to the Bay are concentrated with light industries. Bordering this region, there exists a gently sloping area which contains most of the homes and apartments of lower and middle class families. About two miles from the Bay shore, the slope of the land becomes quite severe. In this area are located some of the finest homes of the San Francisco Bay Region. These homes with views of the Bay and San Francisco are located on choice lots and are inhabited by upper middle and lower upper class families. Many of the homeowners in this area are employed by the University of California, which is located in the center of Berkeley at the base of the hills which serve as a backdrop for the community.

The six largest industries along the Bayshore region employ about 2,500 people. The California State Department of Public Health employs about 1,250 people and the Lawrence Radiation Laboratory of the University of California employs about 3,500 people. The major source of employment for the community is, of course, the University of California, which employs about 12,000 people. As this would suggest, Berkeley is a University Town and has the characteristics of such places.

Basically, the community is academically oriented. Of its population, 27 percent has had some college training, while only 12 percent of Oakland's and 16 percent of San Francisco's citizens have had college training. When it is realized that

21 percent of the Berkeley population is Negro with only a small portion having college training, it means that an even greater percentage of the community's whites have had some college training. This suggests that the intellectual and cultural climate of the community is in many senses, unique. That pressure should be brought upon the Board of Education to desegregate its schools is not surprising and that opposition to its contemplated desegregation would be of considerable magnitude is also not surprising. The community tends to have strong "liberal" attitudes and tends to vote for Democratic presidents; yet, at the same time it has a large conservative population. The community is in reality a city of broad contrasts and that disagreements are expressed is not surprising.

The degree of the contrast can be illustrated on many dimensions. However, we will consider only some of the dimensions that on an a priori basis one might think are related to the attitudes possessed by the adults in the community toward desegregating the schools. Unfortunately, it is not possible to characterize the community on an individual basis since data is not available or else it is too voluminous to present in a report of this length and nature. For this reason, parameters associated with each of the 28 census tracts are used. The reader should avoid the error of concluding that the parameters of the census tract characterize all individuals in the tract. Instead, they should be interpreted as indices. For example, if the median years of education in a particular census tract is 12.6 years and in another tract the median years of education is 16.2 years, it should not be concluded that all people in the second tract have completed college or that no one in the first tract has completed college. What may be concluded is that collectively the people in the second tract have had more education than those in the first tract. In both cases, if an examination were to be made of the distribution of completed years of schooling, it would be seen that in both tracts, some people have had zero years of schooling and that some people have completed more than 16 years of schooling. However, it would be seen that, on the average, the people in the second tract would have had more schooling than those in the first tract. It is this kind of interpretation that must be made in evaluating and studying the parameters associated with the individual census tracts.

The following demographic and socio-economic variables will be used to characterize the census tracts.

1. Median years of completed education for adults of age 25 and over.
2. Median family income.
3. Percentage of population living in owner occupied residences.
4. Percentage of population which is white.
5. Median adult age.
6. Percentage of voters who voted "yes" in a local election in 1961 for the sale of elementary school

bonds.

7. Percentage of voters who voted "yes" in a local election in 1963 for the passage of a fair housing law for the sale and renting of homes in the community.

The set of parameters for the first five variables were determined from the 1960 census reports. The vote on the school bonds and the fair housing law were obtained from the registrar of elections in Berkeley. These parameters were all defined prior to the survey and are not influenced by the de facto segregation study report or by what the Board of Education decided to do about the de facto segregation problem that existed in the community.

The value of these parameters and their distribution across the community are summarized in Table 4. The tracts have been divided into three groups to show the nine tracts with low values of the parameters, the 10 tracts with medium values of the parameters, and the nine tracts with high values of the parameters. It must be mentioned that "low," "medium," and "high" can only be interpreted in the context of this study. They would certainly have different meanings in different communities.

As may be seen by examination of the figures in Table 4, in the nine tracts with the lowest median years of education (9.2 to 12.1), six have low median incomes, and eight have low percentages of whites. Of the nine tracts with the highest

Table 4

Demographic and Socio-Economic Characteristics of the 28 Census Tracts Based upon the 1960 Census Reports and Registrar of Voter Reports

Census Tract	Median Years of Education		Median Family Income		Percent Homeowners		Percent White		Median Age		Percent "Yes" Vote for Sale of Elementary School Bonds		Percent "Yes" Vote for Fair Housing Act	
	Value	Level	Value	Level	Value	Level	Value	Level	Value	Level	Value	Level	Value	Level
1A	9.8	L	5420	L	50.4	M	50.1	L	41.7	L	59.2	L	66.4	H
1B	9.2	L	5180	L	38.1	M	46.7	L	42.6	M	58.6	L	67.4	H
2A	10.7	L	5190	L	53.0	M	11.0	L	43.6	M	64.5	M	88.7	H
2B	10.4	L	4750	L	40.2	M	5.0	L	44.7	M	75.3	H	94.1	H
2C	12.1	L	5130	L	46.3	M	11.2	L	47.8	H	68.9	M	86.9	H
2D	11.0	L	6310	M	65.6	H	22.9	L	45.9	H	55.2	L	82.8	H
3A	12.1	L	4980	L	30.9	L	56.2	L	38.7	L	63.9	M	61.1	H
3B	13.9	M	6420	M	25.5	L	90.2	M	37.4	L	65.2	M	43.9	M
3C	14.7	M	6180	M	24.0	L	96.2	M	41.5	L	70.0	M	40.0	M
3D	15.3	M	8160	H	40.8	M	96.6	H	47.7	H	71.6	H	33.0	L
3E	16.5	H	14210	H	83.4	H	98.0	H	52.3	H	74.8	H	27.2	L
4A	11.2	L	6140	M	50.8	M	67.0	M	45.2	M	48.6	L	49.0	M
4B	12.5	M	5970	M	38.9	M	72.0	M	42.0	M	57.5	L	41.2	M
4C	12.7	M	6520	M	48.3	M	87.0	M	44.7	M	62.5	M	34.7	L
4D	12.0	L	6420	M	60.2	H	66.9	L	44.1	M	54.5	L	40.2	M
4E	12.4	M	6490	M	47.3	M	65.2	L	42.9	M	60.4	L	45.6	M
5A	12.8	M	5000	L	5.2	L	89.8	M	41.1	L	62.9	L	36.4	L
5BA	16.2	H	6730	M	13.6	L	92.5	M	28.7	L	79.4	H	50.3	H
5BB	15.7	H	4630	L	4.3	L	89.5	M	29.0	L	68.9	H	45.4	M
5BC	16.4	H	8280	H	16.9	L	97.5	H	26.0	L	80.5	H	49.9	M
5C	16.8	H	9730	H	64.4	H	97.2	H	43.6	M	75.5	H	50.8	H
5D	13.8	M	7030	M	30.6	L	97.1	H	44.2	M	66.8	M	37.0	L
5E	14.8	M	5690	L	13.6	L	91.8	M	35.9	L	67.1	M	42.5	M
6A	16.0	H	8510	H	83.7	H	98.2	H	50.7	H	63.0	M	32.8	L
6B	16.9	H	10930	H	79.7	H	96.5	M	46.6	H	74.6	H	42.2	M
6C	16.7	H	11900	H	90.2	H	97.8	H	50.5	H	67.7	M	33.4	L
6D	16.6	H	12280	H	90.4	H	97.5	H	52.4	H	70.3	H	30.2	L
6E	13.1	M	8590	H	84.5	H	99.1	H	53.3	H	59.3	L	20.3	L

median years of education (15.7 to 16.9), seven have high median family income, and seven have high percentages of whites. This suggests that these three indices are measuring essentially the same variable. However, what this variable is, is difficult to say. It may be socio-economic status, or it might be race. For the most part, nonwhites tend to have less education and smaller incomes while the whites tend to have more education and larger median family incomes. For this reason, it seems reasonable to consider these three sets of parameters as measures of socio-economic levels of the various census tracts. In Berkeley this means that tracts low on these indices are populated for the most part by lower class status families. This does not mean that all individuals in these tracts are lower class individuals. It does not mean that all children in these tracts are culturally deprived. It does not mean that all adults do not value education. It does not mean that all homes are without books or magazines or newspapers. Nor does it mean that all individuals in the tracts populated for the most part by the upper middle class whites are all of that class.

The distribution of the parameters for the vote on the sale of elementary school bonds is somewhat like the distribution of the parameters of median years of education. Of the nine tracts with low median years of education, six showed low votes for the sale of elementary school bonds, while among the upper nine, six showed the highest vote for the sale of the bonds. This result is not too surprising, since areas with large numbers of educated people would be expected to support programs to extend education and improve the educational facilities for their children. Unfortunately, it is also reasonable to expect that in areas with large numbers of undereducated Negroes, support of schools would be low and many votes against the sale of the bonds would not be unusual, even when they have the most to gain from their sale.

Of the nine tracts with the low median ages, eight had low percentages of people living in owner occupied residences, while of the nine tracts with high median ages, six had high proportions of adults living in owner occupied residences. This suggests that these parameters are measuring essentially the same variable. Since age is an important factor in becoming a home owner, it would seem that these two variables are measuring the median age of the tracts more than the homeownership level of the tracts.

Combining these results, it appears that these variables are essentially measuring two major dimensions. They appear to be socio-economic level of the tracts and median age of the people in the tract.

Since visual inspection of the relationships existing between the sets of parameters suggested that some of the measures were somewhat redundant, it was decided to conduct a principal component analysis to determine how many independent sets of parameters were really needed to analyze the survey results from among these variables. Since one of the uses of a principal component analysis is to reduce the number of independent variables from a prior selection of variables, this procedure seems to be well suited to the problems to be studied here. The rationale behind a principal component analysis and the theory will not be considered here. Instead, the interested reader may look into its development and theory.[1] However, the results and the terminology of the method will be used without explanation.

The correlation matrix used for the principal component analysis is shown in Table 5. As can be seen, some of the correlation coefficients are exceedingly high. This is because parameters and not individual values are being correlated. Therefore the principal component analysis may not be referred to individuals, but only to census tracts. This distinction should be kept in mind in the analysis to be presented.

Of the seven eigen values of the system, three are greater than one. Following the recommendations of Kendall, it means that the entire set of seven variables may be reduced to a set of three orthogonal variables. The distribution of these orthogonal components is shown in Table 6.

In general, these factor loadings can be interpreted as factor loadings of a general factor analysis of which a principal component analysis is a special case. The first principal component accounts for 49 percent of the variance and is negatively weighted with median years of education, median family

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[1] Kendall, M. G. A Course in Multivariate Analysis, Charles Griffin and Co., Ltd., London. Second Impression, 1961. (See Chapter 2.)

Table 5

Correlation Coefficient Matrix for Principal Component Analysis

	1	2	3	4	5	6	7
1	1.00	0.70	0.16	0.78	0.11	0.67	-0.62
2	0.70	1.00	0.70	0.55	0.43	0.38	-0.55
3	0.16	0.70	1.00	0.03	0.79	-0.13	-0.18
4	0.78	0.55	0.03	1.00	-0.09	0.28	-0.93
5	-0.11	0.43	0.79	-0.09	1.00	-0.32	-0.16
6	0.67	0.38	-0.13	0.28	-0.32	1.00	-0.03
7	-0.62	-0.55	-0.18	-0.93	-0.16	-0.03	1.00

1 Median Years of Education
2 Median Family Income
3 Percent Homeowners
4 Percent White
5 Median Age
6 Percent "Yes" Vote for Sale of Elementary School Bond
7 Percent "Yes" Vote for Fair Housing Act

Table 6

Principal Component Factor Loadings

		Eigenvectors (Factor loadings)		
	Variable	First Principal Component	Second Principal Component	Third Principal Component
1	Median Years of Education	-0.48	0.24	0.17
2	Median Family Income	-0.48	-0.21	0.26
3	Percent Homeowners	-0.24	-0.57	0.21
4	Percent White	-0.46	0.21	-0.38
5	Median Age	-0.12	-0.63	0.01
6	Percent "Yes" Vote for sale of Elementary School Bond	-0.24	0.37	0.65
7	Percent "Yes" Vote for Fair Housing Act	0.44	-0.03	0.54
	Eigen Value	3.41	2.12	1.09
	Explained Variance	.49	.30	.15

income, percent white, and positively related to the vote on the fair housing law. This suggests that the first principal component classifies the census tracts on the basis of a socio-economic race level. The second principal component accounts for an additional 30 percent of the variance and is weighted positively with percent of population living in own home and with the median age of the people in the tract. The third principal component explains another 15 percent of the variance and is negatively weighted with the votes for the sale of elementary school bonds and the passage of the fair housing bill.

The value of the principal components for each census tract has been determined. These numbers were used to divide the census tracts into three groups. This partition is shown in Table 7.

The nine census tracts with the highest principal component scores comprise the Negro "ghetto" of the community. For the most part, the people here have had little college training, their median family income is low, and most are new residents to the community. The census tracts with medium values for the first principal component are unique to university towns such as Berkeley. These tracts are populated for the most part by students and their families. Most have some college. They have low family incomes and tend to lower the median age of the tracts. They are not homeowners and tend to live in the many small one-bedroom apartments which surround the University of California. The nine census tracts with low values on the first principal

Table 7

Value and Level of the Three Principal Components for each of the 28 Census Tracts

Census Tract	First Principal Component		Second Principal Component		Third Principal Component	
	Value	Level	Value	Level	Value	Level
1A	.40	L	-.14	M	-.04	M
1B	.47	L	-.12	M	-.07	M
2A	.54	L	-.17	M	.27	L
2B	.57	L	-.05	M	.45	L
2C	.46	L	-.15	M	.34	L
2D	.46	L	-.35	H	.11	M
3A	.30	L	.10	L	-.02	M
3B	.01	M	.22	L	-.13	H
3C	-.08	M	.23	L	-.07	M
3D	-.27	H	.05	M	-.02	M
3E	-.68	H	-.25	H	.21	L
4A	.24	L	-.26	H	-.31	H
4B	.13	L	-.03	M	-.23	H
4C	-.02	M	-.06	M	-.19	H
4D	.12	M	-.21	H	-.23	H
4E	.12	M	-.08	M	-.12	M
5A	.11	M	.22	L	-.28	H
5BA	-.10	M	.59	L	.14	L
5BB	.06	M	.55	L	-.10	M
5BC	-.18	H	.64	L	.19	L
5C	-.36	H	.05	M	.23	L
5D	-.10	M	.09	L	-.13	H
5E	.01	M	.34	L	-.13	H
6A	-.35	H	-.26	H	-.07	M
6B	-.46	H	.02	M	.21	L
6C	-.54	H	-.28	H	.09	M
6D	-.59	H	-.30	H	13	L
6E	-.29	H	-.39	H	-.24	H

component constitute the tracts with very few Negro residents. Their median family income is high, as is their median years of education, and their homeownership level. For the most part, these tracts are populated by professors, doctors, lawyers, and other professional and retired individuals and their families.

The tracts with the highest second principal component values are characterized by high proportions of homeowners and high median ages. The reasons that some of the Negro tracts are included in this classification is that Negroes can buy and own homes in these areas. Tracts that are low on this component surround the University of California. As previously indicated, this area contains many apartment houses populated by young people and students. That this goes along with low homeownership levels is not surprising, since young people are not apt to own homes.

Since the third principal component will not be used in further analyses, it will not be discussed here.

RESULTS AND ANALYSIS

Results are presented in two sections. In the first section demographic and socio-economic characteristics of the informants are described. In addition, an attempt is made to determine whether the sample is unrepresentative of the community since self selection response factors could have over weighted the sample with particular response groups. In the second part, the attitudes of the informants towards some of the recommendations made in the De Facto Segregation Study Report are described. Furthermore, an attempt is made to determine the relationship these attitudes have to the demographic and socio-economic characteristics of the sample members.

For each item appearing on the questionnaire the analysis follows the same format. Responses are first analyzed in terms of the response group to which the informants belong. This means that responses are compared across respondents to the original letter, the follow up letter, and the interview follow up. Next, an analysis is performed of the responses according to the census tract inhabited by the informants. Finally, to help explain the variation in attitudes across various population groups, a number of higher order cross tabulation analyses are made.

Since households are the final sampling unit of the survey, cluster sampling theory had to be used to estimate the percentage of agreement with the recommendations asked about on the questionnaire. In addition, since the number of adults per household was unknown prior to sampling, appropriate estimates had to be derived from ration estimation theory. And since the sample sizes across the 28 census tracts were not large, combined ration estimates were used. A discussion of these procedures and their statistical bases can be found in Sampling Techniques by Wm. G. Cochran, John Wiley and Son, 1963.

It is recalled that the survey was designed to produce estimates which would not deviate from the unknown parameters by more than five percentage points, which meant that the standard errors of the estimates would be less than .025. As it turned out, all standard errors of the estimates ranged between .010 and .031, indicating that the survey was reasonably successful in satisfying this goal. Clearly, most estimates of the unknown parameters have the precision planned for and desired.

Every statistical test for this report has been conducted with a probability of a type one error controlled at .01. This means that many results, normally considered significant at the .05 level by some researchers, are assumed to represent non-significant sources of variation, and are, therefore, passed over with no further comments. However, some exceptions to this last statement will be noted by the careful reader. Since some readers may prefer to conduct statistical tests at different significance levels, most computed χ^2 values are reported. However, there is one major exception to this statement.

A large number of non-parametric tests of interaction were performed on the survey data. The decision resulting from many of these tests was that an interaction of variables does not exist. For these cases the associated Chi-square value is not reported. As a result, interested readers cannot re-evaluate the data for these hypotheses at different significance levels.

Each item is analyzed separately, and in its order of presentation on the questionnaire. In general, most of the analyses are based upon non-parametric Chi-square tests. These are usually tests of homogeneity, tests of goodness of fit, or tests of independence in contingency tables. For rejected hypotheses, post hoc multiple comparisons based upon a Chi-square analog of Scheffé's Theorem were routinely performed to determine possible reasons for the rejection of tested hypotheses. Illustrations of these procedures are shown in examples two and three of Appendix B.

Finally, most readers will be unfamiliar with the statistic used to test some of the hypotheses of the report. This test was derived by the author while working on this contract. The underlying theory of the test is presented in Appendix B. However, to aid the unfamiliar reader, an example using data from question 14 is illustrated here.

The hypothesis to be tested is that the proportion of adults agreeing with the recommendation in the populations represented by the three response groups are equal to the same value. The statistical hypothesis stated in the null form is

$$H_o: P_{(\text{original})} = P_{(\text{follow up})} = P_{(\text{interview})}$$

The test statistic is

$$U_o' = \sum_{k=1}^{3} \hat{W}_k (\hat{p}_k - \hat{p}_o)^2$$

As shown in Appendix B, U_o' has a Chi-square distribution with (K-1) degrees of freedom. In this case, $K = 3$. Thus, with a probability of a type one error set at .01, the hypothesis should be rejected if $U_0' > \chi_2^2(.99) = 9.21$. To assist the reader $\chi_2^2(.99) = 9.21$ refers to the 99th percentile value of the Chi-square distribution with two degrees of freedom. This notation is used throughout the report.

The combined ratio estimates of the unknown parameters and the estimated standard deviations are shown in Table 34. These are the basis data needed for the test of significance. As shown in Appendix B

$$\hat{p}_0 = \frac{\sum_{k=1}^{3} \hat{W}_k \hat{p}_k}{\sum_{k=1}^{3} \hat{W}_k} = \sum_{k=1}^{3} \frac{1}{var(\hat{p}_k)} \hat{p}_k \Big/ \sum_{k=1}^{3} \frac{1}{var(\hat{p}_k)}$$

For this example,

$$\hat{p}_0 = \left[\frac{.578}{(.031)^2} + \frac{.497}{(.053)^2} + \frac{.701}{(.047)^2}\right] \Big/ \left[\frac{1}{(.031)^2} + \frac{1}{(.053)^2} + \frac{1}{(.047)^2}\right] = .593$$

and

$$U_0' = \left(\frac{.578-593}{.031}\right)^2 + \left(\frac{.497-.593}{.053}\right)^2 + \left(\frac{.701-.593}{.047}\right)^2 = 8.79$$

Since U_0' is less than 9.21, the hypothesis is not rejected, and it is concluded that the percentage of agreement with the recommendations is uniform across the three response groups. If the hypothesis had been rejected, post hoc comparisons would have been conducted to locate the sources of the rejection.

Analysis of each question now follows.

SECTION ONE: DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF THE SAMPLE MEMBERS

QUESTION ONE

I am

(1) ___ Male
(2) ___ Female

The sex distribution of the informants according to response group is shown in Table 8. As can be seen, males account for about 45 percent of the sample members. Comparing the sample results to the 1960 census population value of 46 percent with a χ^2 test, the value of the test statistic is found to be given by $\chi^2 = .26$. Since this test of significance is conducted with one degree of freedom, the hypothesis of no difference from expectation is not rejected at the .01 level. Thus, it is reasonable to conclude that both sexes are "fairly" represented in the total sample.

While there appears to be a decrease in the proportion of males entering the survey across time, as suggested by the declining percentages across the three response groups, the decrease is not statistically significant. The Chi-square value associated with this table is 1.62. Since $\chi^2_2(.99) = 9.21$, this result is not significant. This further supports the decision that the proportion of males and females in the sample does not deviate significantly from expectation.

In Table 9 are shown for each of the 28 census tracts the proportion of males in the sample and in the 1960 census population. All Chi-square tests comparing the observed per-

Table 8

Sex Distribution of the Informants According to the Wave of Response

Sex	Wave of Response							
	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Male	226	46.7	97	44.5	115	43.7	438	45.4
Female	258	53.3	121	55.5	148	56.3	527	54.6
Total	494	100.0	218	100.0	263	100.0	965	100.0

Table 9

Proportion of Male Informants, Proportion of Adult Males at 1960 Census, and Corresponding Chi-Square Value for each of the 28 Census Tracts

Census Tract	Number of Informants	Proportion of Male Informants	Proportion of Adult Males at 1960 Census	Chi-Square Value
1A	27	25.9	49.6	6.07
1B	27	37.0	50.7	2.03
2A	26	46.2	46.7	0.00
2B	34	52.9	45.9	0.68
2C	37	48.6	45.6	0.13
2D	24	37.5	46.5	0.81
3A	43	51.2	47.1	0.27
3B	31	54.8	45.3	0.00
3C	50	38.0	41.9	0.33
3D	44	40.9	40.2	0.01
3E	20	45.0	43.4	0.02
4A	34	50.0	47.2	0.12
4B	28	50.0	46.4	0.14
4C	61	45.9	45.3	0.01
4D	28	50.0	48.0	0.03
4E	44	45.5	47.3	0.06
5A	17	41.2	53.3	1.04
5BA	45	55.6	53.0	0.11
5BB	30	40.0	50.8	1.05
5BC	20	50.0	49.6	0.00
5C	45	42.2	46.4	0.32
5D	34	38.2	42.9	0.31
5E	31	41.9	46.3	0.25
6A	23	52.2	45.9	0.34
6B	37	37.8	45.2	0.80
6C	25	45.0	45.8	0.04
6D	42	54.8	45.3	1.54
6E	48	41.7	43.3	0.05

centage of males to the expected percentage of males produced nonsignificant results at the .01 level since $\chi^2_1(.99) = 6.63$. Thus, the sexes are "fairly" represented within each of the 28 census tracts. This further supports the conclusion that the survey is not biased with an over or under representation of males and females.

QUESTION TWO

My age is between

(1) ___ 21 - 29
(2) ___ 30 - 39
(3) ___ 40 - 49
(4) ___ 50 - 59
(5) ___ 60 - 69
(6) ___ 70 and over

The age distributions of the three waves of respondents are shown in Table 10. χ^2 for the three response groups is 20.20. Since $\chi^2_{10}(.99) = 23.21$, the hypothesis of no differences in age distributions across the three waves of respondents is not rejected. However, since the result is near the 99th percentile value, the observed differences in median ages cannot be completely dismissed. The median age of the informants to the original letter was 41.0 and to the follow up letter was 45.3. Interviewed informants were younger. Their median age was 38.6 years.

The age distribution of the entire sample is shown in Table 11. The median age of the entire sample of informants is 41.4 years. This is slightly below the 1960 census figure of 43.4 years. Comparing this distribution to the 1960 census age distribution by means of a Chi-square goodness of fit test

Table 10

Age Distribution of the Informants According to the Wave of Response

Age	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
21-29	143	29.4	53	24.3	67	28.4	263	28.0
30-39	91	18.7	33	15.1	59	25.0	183	19.5
40-49	95	19.5	44	20.2	28	11.9	167	17.8
50-59	66	13.6	48	22.0	39	16.5	153	16.3
60-69	45	9.2	22	10.1	22	9.3	89	9.5
70 and over	46	9.5	18	8.2	21	8.9	85	9.0
Total	486	100.0	218	100.0	236	100.0	940	100.0
Median Age	40.97		45.25		38.64		41.40	

Table 11

Observed Age Distribution of the Informants Compared to the Expected Age Distribution based on the 1960 Census Data

Age	Observed	Expected	Difference
21-29	263	237	26
30-39	183	180	3
40-49	167	156	11
50-59	153	138	15
60-69	89	118	-29
70 and over	85	111	-26
Total	940	940	0

with five degrees of freedom, the value of $\chi^2 = 18.53$. Since $\chi^2_5(.99) = 15.09$, the observed differences represent statistically significant deviations from expectation.

As may be seen by examining the figures in Table 11, older residents of the community appear to be under represented in the total sample. While this may mean that the sample is biased toward a younger age group, this does not seem to be a bias that is overly detrimental to the objectives of the study. The program changes and related actions which a school board might take to integrate schools and classrooms are much more important to the lives and futures of younger parents and their children. Older individuals tend to have fewer children in school, and as time proceeds, the number of their children in school should rapidly decrease to zero. For younger parents, the reverse statement is true. Their children are either in school or else they will be there in a very short time. In spite of this, it would be an error to under represent the older citizens of the community, since large proportions of them tend to be homeowners, and while they might not feel any opposition to the school board's programs to integrate schools and classrooms, they might be opposed to the increased taxes needed to pay for these programs.

It should be mentioned that under representation of older people might not have occurred. χ^2 comparisons of this report are dependent upon 1960 census counts as base data. As is known, the median adult age of the nation has been decreasing because of the post-war baby boom, and it could be that Berkeley has experienced some of this population shift. Such a population shift would be noted in this survey since proportional random samples were taken from each census tract.

In Table 12 are shown for each census tract the median ages of the informants, the median adult ages at the time of the 1960 census counts, and the resulting Chi-square values for testing the hypotheses that the sample medians do not deviate significantly from expectation. As the generally low Chi-square values suggest, the median age of the informants in each census tract agrees reasonably well with the corresponding 1960 figure. Only in tract 3B does a significant difference exist. In this case, the median age is considerably lower than expectation.

Even though the older age groups may be under represented in the total sample, the under representation does not extend to the individual census tracts. Thus, for all practical purposes it does not seem incorrect to conclude that the survey is not overly biased with an unrepresentative age distribution.

QUESTION THREE

I am

(1) ___ White
(2) ___ Negro
(3) ___ Oriental
(4) ___ Other

The racial composition of the informants according to response group is shown in Table 13. The Chi-square value for this table is 106.28, which, with six degrees of freedom indicates that the differences between the race distributions for

Table 12

Median Age of Informants, Median Age of Adults at 1960 Census, and Corresponding Chi-Square Value for each of the 28 Census Tracts

Census Tract	Median Age of Informants	Median Age of Adults at 1960 Census	Chi-Square Value
1A	43.8	41.7	0.04
1B	41.7	42.6	0.14
2A	37.5	43.6	0.66
2B	47.1	44.7	0.27
2C	44.2	47.8	0.72
2D	40.0	45.9	1.38
3A	35.5	38.7	1.60
3B	26.9	37.6	11.57*
3C	39.1	41.5	0.02
3D	46.7	47.7	0.10
3E	47.5	52.3	0.22
4A	37.6	45.2	4.24
4B	41.4	42.0	0.00
4C	41.2	44.7	2.32
4D	45.0	44.1	2.28
4E	38.6	42.9	0.58
5A	28.2	41.1	5.55
5BA	38.0	28.7	3.13
5BB	26.7	29.0	4.17
5BC	30.0	24.9	1.80
5C	48.3	43.6	1.72
5D	41.0	44.2	0.26
5E	30.0	35.9	4.80
6A	45.0	50.7	0.18
6B	47.2	46.6	0.03
6C	50.0	50.5	0.00
6D	47.5	52.4	1.60
6E	50.0	53.3	0.08

* Significant at .01 level

Table 13

Racial Composition of the Informants
According to the Wave of Response

Race	Wave of Response							
	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White	422	86.5	163	74.4	130	54.6	715	75.7
Negro	37	7.6	40	18.3	89	37.4	166	17.6
Oriental	22	4.5	15	6.8	14	5.9	51	5.4
Other	7	1.4	1	0.4	5	2.1	13	1.4
Total	488	100.0	219	100.0	238	100.0	945	100.0

the three response groups cannot be attributed to chance factors. Clearly, Negroes are under represented in the original wave of respondents and are over represented among the interviewed informants.

The lack of response to the original letter by Negroes was expected. Evidence from other studies repeatedly has shown that Negroes and whites in low SES areas rarely respond to mailed questionnaires. Because of this, it was imperative that an effective follow up and interview program be conducted to obtain information from these groups. As shown in Table 13, the follow up program used for this study was quite effective in increasing the Negro response rate to its appropriate level. While only eight percent responded to the original letter, 18 percent responded to the follow up letter. Furthermore, the interview program brought into the survey many Negroes who failed to respond to either letter. In fact, 38 percent of the interviewed informants were Negro.

The race distribution of the entire sample is shown in the "total" columns of Table 13. Comparing this distribution to the 1960 census population values with a Chi-square goodness of fit test, the value of the test statistic is .99. Since this is less than $\chi^2_2(.99) = 9.21$, the goodness of fit hypothesis is not rejected. Thus, it is reasonable to conclude that the races are "fairly" represented in the entire sample.

In Table 14 is shown the percentage of whites in each os the 28 census tracts. Also shown are the corresponding 1960

Table 14

Proportion of White Informants, Proportion of Adult Whites at 1960 Census, and Corresponding Chi-Square Value for each of the 28 Census Tracts

Census Tract	Proportion of White Informants	Proportion of Adult Whites at 1960 Census	Chi-Square Value
1A	4.2	50.1	20.20*
1B	43.2	46.7	0.13
2A	4.2	11.0	1.10
2B	0.0	5.0	1.79
2C	15.2	11.2	0.51
2D	7.7	22.9	3.47
3A	61.9	56.2	0.56
3B	96.3	90.2	1.09
3C	100.0	96.2	1.87
3D	100.0	96.6	1.45
3E	100.0	98.0	0.41
4A	63.2	67.0	0.27
4B	71.4	72.0	0.01
4C	88.7	87.0	0.17
4D	85.7	66.9	4.52
4E	76.7	65.2	2.56
5A	100.0	89.8	2.00
5BA	95.8	92.5	0.77
5BB	93.3	89.5	0.77
5BC	95.0	97.5	0.51
5C	95.7	97.2	0.39
5D	97.1	97.1	0.00
5E	93.3	91.8	0.11
6A	81.0	98.2	33.03*
6B	100.0	96.5	1.35
6C	95.8	97.8	0.51
6D	97.3	97.5	0.01
6E	91.7	99.1	32.67*

*** Significant at .01 level**

census figures with χ^2 tests, the results are nonsignificant for 25 of the 28 census tracts. The exceptional census tracts are 1A, 6A, and 6E. The reason for the discrepancy in tracts 6A and 6E can be attributed to the convenience of combining Orientals with Negroes to form the set of non-whites.

A "better" racial analysis is not possible because census reports include the set of Orientals within the set of non-whites. Since Orientals constitute a large minority group in the survey community, this confounding sometimes makes analysis and interpretation difficult.

In this community the Orientals tend to side with the Caucasians more than they do with the Negroes on many social and political issues. If the responses of the Orientals had been combined with those of the Caucasians then the disparity in the responses of the racial groups would have been more pronounced than the simple white-non-white comparison suggests. Although the transfer of the small number of Oriental respondents to the white response categories would not change the reported percentages significantly, the similarity of the Oriental and Caucasian respondents should be recalled when certain critical comparisons are made in the report.

In any case, it is not unreasonable to conclude that the survey is not biased by an under or over representation of the various races of the community. If it had not been for the interview program, this last statement could not have been made.

QUESTION FOUR

Including myself, the number of people 21 years of age and over who live in my home is

(1) ___ One
(2) ___ Two
(3) ___ Three
(4) ___ Four
(5) ___ If more than four, how many _____?

Since this item was included in the questionnaire only to aid in determining the total sample size and since cross classifications based upon it are meaningless, frequencies have not been tabulated and are not reported here.

QUESTION FIVE

This home is

(1) ___ Owned by us
(2) ___ Rented by us
(3) ___ Other

The homeowner status of the informants according to response category is shown in Table 15. Chi-square for this table is 23.18. Since $\chi^2_2(.99) \simeq 9.21$, the hypothesis of no differences in the percent of homeowners across the three response groups is rejected. The low percentage value for the interviewed informants corresponds favorably with the high percentage of Negroes included in that group. Because of discriminatory real estate practices and their lower income levels, it is known that Negroes have higher probabilities of living in rented houses and apartments than do whites. The high percentage of homeowners among the follow-up informants corresponds favorably with the high median age possessed by the people in that group. Certainly age and homeowner status

Table 15

Homeowner Status of the Informants According to the Wave of Response

Homeowner Status	Wave of Response							
	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Home owned	243	50.2	138	63.3	89	40.6	470	51.0
Home rented	241	49.8	80	36.7	130	59.4	451	49.0
Total	484	100.0	218	100.0	219	100.0	921	100.0

go together in the total population.

In Table 16 is shown the proportion of homeowners in the sample and in the 1960 population by census tracts. None of the percentages deviate from expectation. Thus, it may be concluded that the survey is not biased by an unfair representation of homeowners or renters. However, this conclusion could not have been made if the nonrespondents had not been interviewed.

QUESTION SIX

I have lived in Berkeley for

(1) ___ Less than one year
(2) ___ 1 to 5 years
(3) ___ 6 to 10 years
(4) ___ More than 10 years

The length of time lived in the survey community is shown in Table 17 according to the response group of the informants. The Chi-square test of homogeniety value for this table is 14.15. Since this value is well within 21.67, the 99th percentile value of the χ^2 distribution with nine degrees of freedom, it follows that the three distributions are not statistically different from one another. Approximately 53 percent of the informants had lived in Berkeley more than 10 years.

The median number of years lived in the community for each of the 28 census tracts is shown in Table 18. For the most part, the median length of time lived in Berkeley by the informants is relatively low. It is exceptionally low in the census tracts known to have large student populations. These findings correlate quite well with the large population changes

Table 16

Proportion of Homeowners among the Informants, Proportion of Homeowners in the 1960 Census, and Corresponding Chi-Square Value for each of the 28 Census Tracts

Census Tract	Proportion of Homeowners among the Informants	Proportion of Homeowners in the 1960 Census	Chi-Square Value
1A	54.5	50.4	0.15
1B	50.0	38.1	1.65
2A	63.6	53.0	0.97
2B	43.8	40.2	0.16
2C	68.8	46.3	6.52
2D	80.0	65.6	2.30
3A	16.2	30.9	3.70
3B	7.4	25.5	4.67
3C	21.3	24.0	0.20
3D	51.3	40.8	1.78
3E	88.9	83.4	0.40
4A	41.9	50.8	0.94
4B	35.7	38.9	0.12
4C	53.2	48.3	0.63
4D	44.4	60.2	2.86
4E	61.3	47.3	3.50
5A	5.9	5.2	0.01
5BA	21.3	13.6	2.34
5BB	6.9	4.3	0.39
5BC	35.0	16.9	4.59
5C	71.1	64.4	0.87
5D	38.2	30.6	0.71
5E	3.3	13.6	2.71
6A	90.9	83.7	0.85
6B	80.6	79.7	0.02
6C	100.0	90.2	2.65
6D	86.1	90.4	0.71
6E	93.6	84.5	3.00

Table 17

Years Lived in Berkeley by Informants According to the Wave of Response

Years Lived in Berkeley	Wave of Response							
	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Less than 1 year	53	10.9	10	4.5	24	10.7	87	9.3
1 to 5 years	131	26.9	59	26.6	53	23.6	243	26.0
6 to 10 years	61	12.5	19	8.6	30	13.3	110	11.8
More than 10 years	242	49.7	134	60.4	118	52.4	494	52.9
Total	487	100.0	222	100.0	225	100.0	934	100.0

Table 18

Median Years Lived in Berkeley by Informants for each of the 28 Census Tracts

Census Tract	Median Years Lived in Berkeley by Informants
1A	11.0
1B	11.0
2A	13.1
2B	13.0
2C	16.0
2D	12.4
3A	5.3
3B	3.2
3C	10.4
3D	16.7
3E	24.3
4A	21.0
4B	12.0
4C	15.5
4D	24.3
4E	16.0
5A	6.0
5BA	5.1
5BB	3.5
5BC	7.6
5C	15.0
5D	5.4
5E	5.3
6A	21.0
6B	13.5
6C	22.3
6D	18.9
6E	22.6

Berkeley has experienced since 1940.

In Table 19 is shown the distribution of this variable according to race. The Chi-square value of this table is 33.10, and with three degrees of freedom this indicates that the two distributions are statistically different. The large proportion of whites who have have lived in the community less than six years represent, for the most part, University of California graduate students and their families or the young adults who have gravitated to the University and its many subcultures. That their attitudes to some of the items appearing on the questionnaire might color the total community picture cannot be doubted. As a group, they tend to be quite liberal, and their interest in social behaviour and movements is well known across the nation. Whether or not this contributes to a bias in the sample cannot be stated since there are no figures to which these results may be compared.

QUESTION SEVEN

At this time

(1) ___ I am registered to vote in Berkeley
(2) ___ I am not registered to vote in Berkeley

This item was included on the questionnaire to provide information about the social and political awareness of the respondents. It would have been unfortunate if only informed and involved adults had answered the questions. Since it is known that mail questionnaire respondents tend to have some involvement with the subject of a survey or with the agency conducting the survey, the over representation of certain sub-

Table 19

Years Lived in Berkeley by Informants
According to Race

Years Lived in Berkeley	White	Non-White	Total
Less than One year	83	4	87
One to Five Years	175	66	241
Five to 10 Years	73	32	105
More than 10 Years	368	120	488
Total	699	222	921

groups in the sample did not seem unlikely. In this case, the survey involved a significant community problem. Furthermore, reports in the local newspaper suggested that the community was divided on this problem with most of the expressed opposition centered among citizens whose political views were to the right of center. Whether this was actually true could not have been stated at the time of the survey, but since it might have been true, some means for detecting this seemed to be important.

It should be recalled that the survey was conducted during April and May of 1964, just a few weeks before the California primary election. Reports of the increased strength of conservative groups were common in the press and television news broadcasts. Since a conservative political view frequently involves a strong chauvinistic element, it would appear that conservatives would have high probabilities of being registered voters, actual voters, and active letter writers. As a corollary, they should also be questionnaire respondents, especially if the subject of the questionnaire involved possible modifications of social conditions; this questionnaire was concerned with exactly these kinds of modifications.

Since random samples of all adults were to be selected, it would follow that conservatives would be drawn into the survey, and since they would be eager to express themselves, they would return the completed questionnaires in proportions exceeding their fair representation in the sample. Naturally, their responses were vital to the success of the survey but just as important were the responses of those less committed to letter writing and questionnaire responding.

The amount of voter registration by wave of informant is shown in Table 20. The Chi-square for this table is 31.84. With two degrees of freedom this indicates that statistically reliable differences exist among the three response groups with respect to their level of voter registration. According to registration records, approximately 70 percent of all eligible voters were registered to vote on February 20, 1964, two months before the survey. Thus, as expected, respondents to the original and follow-up letters were over weighted with large proportions of adults who claimed to be registered to vote. Within these two groups approximately 85 percent were registered to vote. Among the interviewed informants, only 68 percent were registered.

In Table 21 are shown the percentages of registered voters by census tracts. For the most part, these percentages are too high. In only three tracts are they below 70 percent. The magnitudes of the deviations cannot be assessed since soon after the Board's meeting of May 19, 1964, the opponents of the Board began a campaign to recall the board incumbents. Since this did affect the number of registered voters, no attempt was made to collate the registrar's records with census tract boundaries. According to county records, the number of registered voters increased from 54,010 on February 20, 1964 to 70,641 on September 25, 1964. Finally, if individual res-

Table 20

Voter Registration of the Informants
According to the Wave of Response

	Wave of Response							
Voting Status	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Registered	415	85.7	184	83.6	155	68.0	754	80.9
Not Registered	69	14.3	36	16.4	73	32.0	178	19.1
Total	484	100.0	220	100.0	228	100.0	932	100.0

Table 21

Proportion of Informants Registered to Vote, for each of the 28 Census Tracts

Census Tract	Proportion of Informants Registered to Vote
1A	87.0
1B	75.0
2A	82.6
2B	93.9
2C	82.9
2D	72.0
3A	71.1
3B	55.5
3C	85.1
3D	89.7
3E	100.0
4A	72.4
4B	66.7
4C	79.0
4D	82.1
4E	72.7
5A	94.4
5BA	72.9
5BB	63.3
5BC	85.0
5C	84.8
5D	71.4
5E	73.3
6A	100.0
6B	88.9
6C	100.0
6D	86.5
6E	87.5

ponses have some validity, then it must be concluded that the survey is over represented with registered voters. However, if some individuals did not tell the truth about being registered to vote, then, perhaps, the survey is not biased on this dimension.

QUESTION EIGHT

In the 1960 presidential election

(1) ___ I voted
(2) ___ I did not vote
(3) ___ I do not remember

This, like the previous item, was included on the questionnaire to measure the social and political awareness of the respondents. Results for this item are shown in Table 22, according to the response category. The Chi-square for this table is 11.50. This represents the existence of statistically significant differences at the .01 level. As with question seven, the differences can be attributed to the low percentage for the interviewed informants.

The percentage of informants voting in the 1960 presidential election is shown in Table 23 by census tracts. Again, it is not known whether these figures agree with voter registration figures. That they might be too high would not be very surprising.

QUESTION NINE

In the 1963 city election for mayor

(1) ___ I voted
(2) ___ I did not vote
(3) ___ I do not remember

Table 22.

Voting Behavior of the Informants in the 1960 Presidential Election According to the Wave of Response

Voting Behavior	Wave of Response Response to Original letter		Response to Follow-up letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Voted	377	78.1	173	78.6	151	66.5	701	75.4
Did not Vote	103	21.3	47	21.4	74	32.6	224	24.1
Did not remember	3	0.6	0	0.0	2	0.8	5	0.5
Total	483	100.0	220	100.0	227	100.0	930	100.0

Table 23

Proportion of Informants who Voted in the 1960 Presidential Election, for each of the 28 Census Tracts

Census Tract	Proportion of Informants who Voted
1A	79.2
1B	75.0
2A	79.1
2B	87.5
2C	68.6
2D	91.7
3A	54.1
3B	44.4
3C	63.8
3D	76.9
3E	100.0
4A	67.9
4B	64.3
4C	82.0
4D	78.6
4E	76.2
5A	66.7
5BA	68.8
5BB	40.0
5BC	75.0
5C	81.8
5D	62.9
5E	66.7
6A	100.0
6B	86.1
6C	96.0
6D	94.6
6E	93.6

This item was placed in the questionnaire to further measure the respondents' commitments to the community. The 1963 election was an important election in Berkeley. On the ballot was a proposition supporting the principles of fair housing. The campaign prior to the election was somewhat heated and involved many citizens of the community. On election day the proposition was defeated by a very narrow margin. The "no" vote accounted for 52 percent of the total vote. When the De Facto Segregation Study Report was released to the public, the outcome of this election was still fresh in the minds of many of the community's citizens

Responses to this item are summarized in Table 24 according to the three response groups. The Chi-square for this table is 31.82. With two degrees of freedom this represents a statistically significant result at the .01 level. According to post hoc comparisons, the major source of variation can be attributed to the low percentage of voters among the interviewed informants. As is recalled, many of them were Negro.

Voting records by census tract are summarized in Table 25. Tracts 6A, 6B, 6C, 6D, and 6E, gave very little support to the passage of the fair housing law. Yet, a large number of the informants said they voted in the 1963 election. The lowest percentages are shown by the informants in the census tracts that contain large student populations. Many of these students are registered to vote in their hometowns. Therefore, their low percentages do not necessarily imply weak commitment to the

Table 24

Voting Behavior of the Informants in the 1963 Municipal Election for Mayor According to the Wave of Response

Voting Behavior	Wave of Response Response to Original Letter Number	 Percent	 Response to Follow-up Letter Number	 Percent	 Response to Interview Number	 Percent	 Total Number	 Percent
Voted	305	63.5	152	69.1	96	43.0	553	60.0
Did not Vote	160	33.3	65	29.5	113	50.7	338	36.6
Did not Remember	15	3.2	3	1.4	14	6.3	32	3.4
Total	480	100.0	220	100.0	223	100.0	923	100.0

Table 25

Percent "Yes" vote for passage of the Fair Housing Act and the Proportion of Informants who said they voted in the 1963 Municipal Election, for each of the 28 Census Tracts

Census Tract	Proportion of Informants who voted	Proportion Voting "Yes" on Fair Housing Act
1A	78.3	66.0
1B	65.2	67.0
2A	65.2	88.7
2B	81.8	94.1
2C	61.3	86.9
2D	70.8	82.8
3A	28.9	61.0
3B	11.5	43.9
3C	60.0	40.0
3D	66.7	32.5
3E	88.9	27.2
4A	53.8	49.0
4B	53.6	41.2
4C	64.4	34.7
4D	63.0	40.2
4E	56.1	45.6
5A	58.8	36.4
5BA	53.2	50.3
5BB	36.7	45.4
5BC	57.9	49.9
5C	73.3	50.8
5D	34.4	37.9
5E	48.1	42.5
6A	95.2	32.8
6B	61.8	42.2
6C	92.0	33.4
6D	80.0	30.2
6E	80.0	20.3

community. In the Negro tracts, about 70 percent said they voted in the 1963 election.

In any case, the proportion of informants who said they voted in this election is considerably lower than the total percentage reported by the registrar of elections. According to voting records, about 80 percent of the eligible registered voters appeared at the polls to vote. Thus, the total sample is under represented with individuals who voted in the 1963 election. This most likely reflects the over representation of young adults who are probably registered voters in their home communities.

QUESTION TEN

I have relatives (students, teachers, and other employees) in the Berkeley public schools.

(1) ___ No
(2) ___ Yes

The percent of informants with relatives in the public school system is shown in Table 26 according to response wave. The Chi-square value for this table is .17. This indicates that the observed differences represent chance differences. Approximately 30 percent of the informants had some relatives in the school system. For the most part, these people were parents.

Percentages by census tract are shown in Table 27. As might be expected, the low SES tracts had the highest percentage. It might be reasonable to assume that citizens in these areas should have the most interest in the changes that the school

Table 26

Proportion of Informants with Relatives in the Berkeley Public School System According to the Wave of Response

Relatives	Wave of Response							
	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Yes	146	30.3	69	31.4	66	29.3	281	30.3
No	336	69.7	151	68.6	159	70.7	646	69.7
Total	482	100.0	220	100.0	225	100.0	927	100.0

Table 27

Proportion of Informants with Relatives in the Berkeley Public School System, for each of the 28 Census Tracts

Census Tract	Proportion of Informants with Relatives in the Berkeley Public School System
1A	45.8
1B	32.1
2A	66.7
2B	45.5
2C	48.7
2D	60.9
3A	17.9
3B	18.5
3C	23.4
3D	41.0
3E	41.2
4A	34.5
4B	25.0
4C	32.8
4D	21.4
4E	27.9
5A	11.8
5BA	6.4
5BB	6.7
5BC	35.0
5C	27.0
5D	29.4
5E	10.0
6A	36.4
6B	25.7
6C	12.0
6D	40.6
6E	31.2

board might propose. Even so, their attitudes had to be measured through interviewing.

Unfortunately, it is not possible to compare these percentages with information from other sources. Thus, it is not known whether the sample is under or over represented with adults who have children or other relatives associated with the school system.

QUESTION ELEVEN

The highest grade (or years) of school I have had is

(1) ___ None
(2) ___ Grade school
(3) ___ High school
(4) ___ College

This item did not appear in the questionnaire in this form, but it seems that most people answered it in this fashion. As a result, this question will be treated in further analyses as though it were stated in this form.

Results for this item are summarized in Table 28. For this table $\chi^2 = 33.70$ while $\chi^2_4(.99) = 13.28$. The rejection of the tested hypothesis can be attributed to the high median years of schooling possessed by the informants to the original letter. Even though their school attainment is high, when compared to the other two groups, their level is exceptionally high when compared to most other population groups. These results correlate quite well with the known high levels of educational attainment possessed by the citizens of Berkeley.

In Table 29 are shown the levels of schooling completed by the informants of each census tract. As expected,

Table 28

Amount of Education of the Informants
According to the Wave of Response

Amount of Education	Wave of Response							
	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
None (0)	2	0.4	2	0.9	1	0.3	5	0.6
Grade School (1-8)	12	2.5	14	6.4	28	8.2	54	5.8
High School (9-12)	94	19.5	63	28.6	92	26.8	249	26.9
College (13 or more)	374	77.6	141	64.1	222	64.7	617	66.7
Total	482	100.0	220	100.0	343	100.0	925	100.0
Median Years of Schooling	13.4		12.9		12.9		13.0	

Table 29

Amount of Completed Education of the Informants
for each of the 28 Census Tracts

Census Tract	Percent with Grade School or Less	Percent with Some High School	Percent with Some College
1A	26.1	52.2	21.7
1B	14.8	70.4	14.8
2A	8.3	62.5	29.2
2B	18.2	36.4	45.4
2C	14.3	48.6	37.1
2D	24.0	56.0	20.0
3A	5.4	43.2	51.4
3B	3.7	0.0	96.3
3C	0.0	23.9	76.1
3D	2.5	7.5	90.0
3E	0.0	16.7	83.3
4A	17.2	37.9	44.9
4B	10.7	42.9	46.4
4C	6.6	34.4	59.0
4D	7.7	26.9	65.3
4E	6.8	34.1	59.1
5A	0.0	5.5	94.5
5BA	4.2	10.4	85.4
5BB	0.0	10.0	90.0
5BC	0.0	0.0	100.0
5C	8.7	2.2	89.1
5D	0.0	25.7	74.3
5E	0.0	10.0	90.9
6A	0.0	18.2	81.8
6B	2.9	17.1	80.0
6C	0.0	20.0	80.0
6D	0.0	5.7	94.3
6E	4.3	38.3	57.4

over 80 percent of the informants in the high SES areas had some college training. Somewhat remarkable was the amount of college training possessed by adults in the low SES areas. It appears that among these informants about 30 percent had some college training. In any case, the overall educational attainment of the informants is high. As may be seen, the level of educational attainment increases with the SES level of the tract. However, throughout the 28 census tracts the overall educational attainment of the informants is high.

QUESTION TWELVE

I went to the Berkeley Public Schools during

(1) ___ both my high school and grade school years
(2) ___ my high school years only
(3) ___ my grade school years only
(4) ___ No time (I went to school at another place)

Responses to this item are summarized in Table 30 according to the response group of the informants. The Chi-square for this table is 3.05 indicating that the differences across the three response groups can be attributed to chance deviations.

Over 80 percent of the informants were schooled in communities other than Berkeley. This, of course, agrees with the large population changes that the community has experienced since 1940. It is worth noting that only 11 percent of the informants had both their elementary and secondary education in the community.

In Table 31 are shown, according to census tract, the proportion of informants schooled in other communities. Since

Table 30

Type of Education in Berkeley Public Schools by the Informants According to the Wave of Response

Type of Education	Wave of Response Response to Original Letter Number	 Percent	 Response to Follow-up Letter Number	 Percent	 Response to Interview Number	 Percent	 Total Number	 Percent
High School and Grade School	50	10.6	26	12.1	23	11.1	99	11.1
High School only	16	3.4	7	3.3	3	1.4	26	2.9
Grade School only	8	1.7	2	0.9	4	1.9	14	1.6
No time	396	84.3	180	83.7	177	85.5	753	84.4
Total	470	100.0	215	100.0	207	100.0	892	100.0

Table 31

Proportion of Informants Schooled
in Communities other than Berkeley
for each of the 28 Census Tracts

Census Tract	Proportion of Informants Schooled in Communities other than Berkeley
1A	70.0
1B	84.0
2A	77.3
2B	90.6
2C	72.4
2D	95.5
3A	89.2
3B	100.0
3C	87.0
3D	76.3
3E	61.1
4A	66.7
4B	84.0
4C	82.5
4D	92.6
4E	85.4
5A	76.5
5BA	91.5
5BB	90.0
5BC	80.0
5C	84.1
5D	82.9
5E	93.3
6A	86.4
6B	91.7
6C	92.0
6D	79.5
6E	80.0

no independent set of data exists to which these figures may be compared, it is not known whether the sample is biased relative to this characteristic. The known large mobility of the community's population suggests that the sample is not biased to any appreciable degree, but this is conjecture.

QUESTION THIRTEEN

The Berkeley Board of Education asked a citizen's committee to report on the chances that children of all races have for a good education in the Public Schools of Berkeley. The report was called "De Facto Segregation in the Berkeley Public Schools." I have

(1) ___ Not heard about the report
(2) ___ Heard about the report but have not read it
(3) ___ Read the report

Responses to this item are summarized in Table 32, according to the response group of the informants. Chi-square for this table is 103.79. The major source of the variation can be attributed to the interviewed informants. Approximately 25 percent of them had not heard about the report. Moreover, only 22 percent had read the report as compared to more than 40 percent for the other two response groups. In a sense this was unfortunate, but entirely expected. It was unfortunate since many of these people were Negroes and the decisions of the school board were certain to affect many of their lives in one way or another.

Responses to this item by census tract are shown in Table 33. As can be seen, there is a tendency for the report to have been read in the high SES areas. This is further illustrated in Table 34 which shows the responses to the question

Table 32

Informant's Knowledge about the "De Facto Segregation in Berkeley Public Schools" Report According to the Wave of Response

Knowledge	Response to Original Letter		Response to Follow-up Letter		Response to Interview		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Had Not Heard about Report	39	8.0	18	8.3	55	24.7	112	12.1
Had Heard about but Had Not Read Report	252	52.0	97	44.5	119	53.4	468	50.5
Had Read Report	194	40.0	103	47.2	49	21.9	346	37.4
Total	485	100.0	218	100.0	223	100.0	926	100.0

Table 33

Informant's Knowledge about the "De Facto Segregation in Berkeley Public Schools" Report for each of the 28 Census Tracts

	Proportion of Informants who have---		
Census Tract	**Not Heard about Report**	**Heard about but Not Read Report**	**Read Report**
1A	13.0	69.6	17.4
1B	17.9	50.0	32.1
2A	16.6	41.7	41.7
2B	9.4	59.4	31.2
2C	11.4	65.7	22.9
2D	20.8	58.4	20.8
3A	35.2	43.2	21.6
3B	14.3	75.0	10.7
3C	8.5	48.9	42.6
3D	2.5	47.5	50.0
3E	0.0	16.7	83.3
4A	27.6	34.5	37.9
4B	28.6	39.3	32.1
4C	6.5	48.4	45.1
4D	25.9	48.2	25.9
4E	9.1	47.7	43.2
5A	5.9	76.5	17.6
5BA	10.6	61.7	27.7
5BB	20.0	56.7	23.3
5BC	15.0	50.0	35.0
5C	2.2	46.7	51.1
5D	5.9	50.0	44.1
5E	20.0	63.3	16.7
6A	9.1	31.8	59.1
6B	0.0	50.0	50.0
6C	4.0	48.0	48.0
6D	8.1	43.2	48.7
6E	8.3	50.0	41.7

Table 34

Knowledge of the Informants about the De Facto Segregation Study Report, according to the First Principal Component

	Principal Component Level			Total Sample Size
	Low	Medium	High	
Not Heard about Report	20.4	11.7	5.2	111
Heard about but not Read Report	51.2	55.5	44.7	466
Read Report	28.5	32.8	50.4	340
Total	100.0	100.0	100.0	917

according to the first principal component. Chi-square for this table is 50.79. In the high SES census tracts only five percent had not heard about the report and over 50 percent claimed to have read the report. On the other hand, in the low SES tracts over 20 percent had not heard about the report. In addition, only 29 percent claimed to have read it.

This result clearly demonstrates the low level of community knowledge and involvement possessed by citizens most directly involved with the school board's actions. On the other hand, it also shows that citizens of high SES areas with considerable amounts of education tend to be well aware of the changes that might affect the entire community which the school board plans to take in the future.

SECTION TWO: ATTITUDES OF THE SAMPLE MEMBERS TOWARD THE RECOMMENDATIONS

For the remaining analyses and discussion, the "I am not sure" responses have been omitted. Since they accounted for only a small part of the total, their elimination should not materially affect the results.

QUESTION FOURTEEN

For some schools the committee suggested that lines be changed so that the percentage of nonwhite and white children in these schools would be more like the percentage for the entire school system.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

Results for this question are summarized in Table 35,

Table 35

Agreement with the Recommendation to Change Elementary School Boundaries According to the Wave of Response (Question Fourteen)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreeing to the Recommendation	57.8	49.7	70.1	63.7
Standard Error of Estimate	3.1	5.3	4.7	2.9
95% Confidence Interval	51.7-63.9	39.3-60.1	60.9-79.3	57.9-69.4

according to the response group. In the total sample, the combined estimate of the proportion of adults agreeing with the recommendation to change the elementary school boundaries is .637. The standard error of this estimate is .029. This is quite small and very close to the planned survey value of .025. The 95 percent confidence interval for the unknown proportion of agreement by the adults in the community is given by $.579 < P < .694$. Since $P = .50$ is not included in this interval, it is reasonable to conclude that a majority of the adult population of the community believes that the recommendation to change the elementary school boundaries is acceptable or reasonable. Furthermore, from a post hoc point of view it appears that almost two-thirds of the adult population agrees with the recommendation. This is quite different from the newspaper poll and PTA survey values of 20 percent and 34 percent agreement. While it appears that respondents to the follow up letter show a low level of agreement with the recommendation, this conclusion would not be warranted under the general decision to conduct all statistical tests for this report with a probability of a type one error equal to .01. The value of Chi-square for this table is 8.80. This is below the .01 value of 9.21. Because it is so close to the critical test value, some comments about the apparent variation are pertinent.

As shown earlier, the informants to the follow up letter had a higher median age than informants to the original letter and to the interview. In addition, more were homeowners and over 60 percent had lived in Berkeley for periods exceeding 10 years. These results suggest that the apparent low agreement among the follow up informants reflects the older age composition of the adults in this response group. As will be seen, further analysis supports this conclusion. At the same time, the strong favorable attitude expressed by the interviewed informants is easy to explain. Many of them were Negro, and their agreement with the recommendation is not surprising. However, it should be restated that these differences are not statistically significant at the .01 level even though they were predictable.

Agreement with the recommendation to change the elementary school boundaries is shown in Table 36 by census tract. As may be seen, the greatest support is found in the low SES tracts and in the student tracts of the community. In these tracts, the 95 percent confidence intervals for the unknown parameters are entirely above $P = .50$. This suggests that within these tracts more than 50 percent of the adults favor the recommendation. However, in census tracts 3D, 3E, 6A, and 6E, opposition to the recommendation exists. The confidence intervals for these tracts are entirely below $P = .50$. For the most part, these four tracts represent high SES areas with high income families and high attainments in education. Furthermore, these areas are located high in the hills of Berkeley with minimal public transportation. Major school boundary changes could have affected the movement and transportation of many

Table 36

Agreement with the Recommendation to Change Elementary School Boundaries for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	74.6	23.3	28.9-100.0
1B	80.1	13.4	53.9-100.0*
2A	97.1	3.2	90.8-100.0*
2B	100.0	0.0	100.0*
2C	75.0	7.7	59.9-90.1*
2D	94.1	6.2	81.9-100.0*
3A	68.7	13.4	42.4-95.0
3B	67.3	32.7	3.2-100.0
3C	34.6	12.2	10.7-58.5
3D	39.3	5.1	29.3-49.3**
3E	13.3	8.2	0.0-29.4**
4A	66.5	13.1	40.8-93.5
4B	77.9	13.8	50.9-100.0*
4C	48.8	9.1	31.0-66.6
4D	42.9	22.4	0.0-86.8
4E	51.0	12.4	26.7-75.3
5A	83.9	7.1	70.0-97.8*
5BA	57.6	15.8	26.6-88.6
5BB	93.5	3.4	86.8-100.0*
5BC	38.4	8.4	22.0-55.0
5C	48.3	5.1	38.3-58.3
5D	51.2	6.1	29.2-53.2
5E	48.7	21.6	6.4-91.0
6A	28.0	3.5	21.1-34.9**
6B	39.9	13.5	13.3-66.3
6C	64.9	7.6	50.0-79.8*
6D	69.2	5.8	57.8-80.6*
6E	17.9	6.5	5.2-30.6**
Total	63.7	2.9	57.9-69.4

*Confidence intervals are entirely above .50
**Confidence intervals are entirely below .50

children in these areas to parts of the community that may have appeared to be physically undesirable and far away to some of the informants.

In Table 37 is shown the proportion of informants agreeing with the recommendation to change the elementary school boundaries according to the demographic and socio-economic questions asked of each informant. As can be seen, the sex of the informants, the presence of relatives in the school system, and the amount of college training possessed by the informants all appear to be unrelated to the stated agreement or disagreement with the recommendation. However, this is not true for the age of the informants, their homeowner status, their length of time lived in Berkeley, nor the amount of their education completed in Berkeley's schools. Definite opposition was expressed by informants over the age of 40, by homeowners, by long term residents of the community, and by individuals taught in the Berkeley school system. While the differences for race, voter registration, vote in the 1960 presidential election, and vote in the 1963 mayorality election are all statistically significant, the estimates of the unknown parameters are all above $P = .50$. Thus, even though responses differ on these variables, the general attitude is one of favor with the recommendation.

Another way in which responses to this question may be examined is to classify or rank the census tracts according to demographic data and other pubicly available data and to con-

Table 37

Question 14--Percent Agreeing to the Recommendation to Change Elementary School Boundaries, according to the Respondents' Characteristics

Item Number	Item	Chi-Square Value	Percent Agree	Number in Sample
1.	Sex	.53		
	Male		57.9	349
	Female		60.5	405
2.	Age	60.37*		
	Less than 40 years		72.9	369
	More than 40 years		46.3	389
3.	Race	87.90*		
	White		51.4	578
	Non-white		83.6	183
5.	Home Ownership	66.25*		
	Own		45.8	397
	Rent		73.7	357
6.	Berkeley Residence	88.40*		
	Less than 5 years		79.1	273
	More than 5 years		47.8	492
7.	Voter Registration	27.29*		
	Registered		55.2	620
	Not Registered		76.4	144
8.	Presidential Election 1960	52.26*		
	Voted		52.9	571
	Did Not Vote		79.1	187
9.	"Fair Housing"-mayoralty Election	46.22*		
	Voted		50.2	458
	Did Not Vote		74.2	275
10.	Relatives in Berkeley School System	4.08		
	Yes		53.9	241
	No		61.7	520
11.	Education	.07		
	High School or Less		59.0	239
	At Least Some College		60.0	520
12.	Education in Berkeley Public Schools	15.12*		
	Some		43.3	120
	None		62.5	621

*Significant at .01 level

sider the responses in terms of these other variables. There are many demographic variables which may be used for this kind of an analysis. Seven interesting variables have been described earlier. Their intercorrelations have been analyzed and used to reduce the number of variables to a smaller set of three variables by means of a principal component analysis. As will be recalled, the first principal component accounted for 49 percent of the total variability among the seven selected variables. In addition, the first principal component appeared to be related to a general socio-economic status-white-non-white variable that characterized the 28 census tracts. When the first principal component scores are employed as a ranking variable, and the 28 census tracts are divided into three SES levels, some interesting results emerge.

For this analysis, the low SES areas correspond to the nine census tracts with the lowest principal component scores, while the high SES areas correspond to the nine census tracts with the highest principal component scores. The middle 10 tracts constitute the medium SES areas of the community. The results of this classification and the corresponding interactions with a number of the items appearing on the questionnaire are shown in Table 38. Only the significant interactions are reported. Items which did not interact with the principal components had response percentages that are essentially the same as shown for the first principal component by itself.

For the first principal component, 80 percent of the

Table 38

Question 14--Interaction of Respondents' Characteristics and Their Classification on the First Principal Component

Item Number	Item	Percent Agreeing			Number In Sample			Chi-Square Value
		Low	Medium	High	Low	Medium	High	
	First Principal Component	80.2	59.1	43.2	207	281	266	82.30
2.	Age							16.76
	Less than 40	84.0	74.7	55.3	106	178	85	
	40 and over	76.2	34.9	36.3	101	106	182	
3.	Race							10.08
	White	55.0	58.8	43.0	60	260	258	
	Non-white	90.5	61.5	40.0	147	26	10	
5.	Home Ownership							15.26
	Own	76.9	34.8	34.8	104	89	204	
	Rent	83.7	70.4	68.3	98	196	63	
6.	Berkeley Residence							11.73
	Five years or Less	89.2	79.9	66.2	74	134	65	
	More than Five Years	75.2	40.9	35.1	133	154	205	
8.	Presidential Election 1960							14.09
	Voted	79.7	49.2	38.8	148	191	232	
	Did Not Vote	82.8	79.8	71.4	58	94	35	
11.	Education							9.89
	High School or Less	81.6	37.3	30.9	125	59	51	
	At Least Some College	81.7	65.0	46.2	82	226	212	

informants from the low SES areas agree with the recommendation to change school boundaries, with the corresponding percentages among the informants from the medium and high SES areas being 59 percent and 43 percent respectively. Since the low SES areas are predominately Negro and since the high SES areas are predominately white, this finding supports the general conclusions already made.

To further extract the influences which some of the other variables may have upon the expressed attitudes of the informants each significant interaction effect is discussed and analyzed.

Age of the informants. Informants under the age of 40 from all three SES areas supported the recommendation. The same is true of informants over the age of 40 in the low SES areas. However, adults in the medium and high SES areas over the age of 40 did not support the recommendation to change the elementary school boundaries.

Race of the informants. Both whites and non-whites in the low and medium SES areas agreed with the recommendation, with the non-whites in the low SES areas showing the strongest agreement. Ninety percent of them agreed. Both non-whites and whites in the high SES areas did not support the recommendation. However it does not follow that high SES Negroes did not support the recommendation. This difference exists because the 10 non-whites in the high SES area were all Orientals.

Homeowner status. Agreement with the recommendation was expressed by renters in all three SES areas. The same was true of homeowners in the low SES areas. In all probability, these people were Negro. Disagreement was expressed by homeowners in both the medium and high SES areas. This overall pattern parallels very closely that shown for age. Since these variables tend to be correlated, this is expected.

Number of years lived in Berkeley. The response pattern for this variable parallels very closely that shown by age. For both variables opposition was expressed by informants who had lived more than five years in Berkeley provided that their homes were in medium and high SES areas.

1960 voting history. The response pattern for this variable parallels that of homeowner status. This is not too surprising since homeowners would be expected to be more concerned with local politics that would people who rent. Homeowners tend to have greater commitments and involvements with the community in which they live. If, in addition, they are advanced in age, they might be quite concerned about property taxes, and might oppose changes in school practices because of the fear of increased taxes. Among adults in the high SES areas who voted in 1960, less than 40 percent supported the recommendation, while among the adults in the low SES areas who did not vote in 1960, more than 80 percent supported the recommendation.

Educational level of the informants. In the low SES areas informants who had some college and informants who had none expressed strong support for the recommendation, suggesting that at the low SES level education is not an important factor in influencing attitudes toward the recommendation. In the medium and high SES areas citizens who had not had any college training were against the proposition.

These results further support the conclusion that opposition is centered among the older established white residents of the community. In addition, they appear to have greater involvement in the community in that they tend to be homeowners and tend to vote. At the other extreme, strong support is expressed by Negroes of both high and low levels of educational attainment. There is also a suggestion in the data that whites in upper SES areas and with low educational levels oppose the recommendation more than do educated whites in the same areas. However, young whites with advanced educations have favorable attitudes toward the recommendation to change elementary school boundaries to improve the racial balances in the schools.

QUESTION FIFTEEN

For Garfield and Burbank Junior High Schools, the committee suggested that school lines be changed so that the percentage of non-white and white children in these schools would be more like the percentage for the entire school system.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

Results for this question are summarized in Tables 39, 40, 41, and 42. Chi-square for Table 39 is 8.82. Therefore, differences across the Table are not significant at the .01 level. The combined estimate of the proportion of adults agreeing with the recommendation to change junior high school

Table39

Agreement with the Recommendation to Change Junior High School Boundaries, according to the Wave of Response (Question Fifteen)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreement to the Recommendation	58.9	45.9	67.3	62.0
Standard Error of Estimate	3.1	5.4	4.8	3.0
95% Confidence Interval	52.7-65.0	35.3-56.5	59.9-76.7	56.1-67.9

Table 40

Agreement with the Recommendation to Change Junior High School Boundaries for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	59.8	36.0	0.0-100.0
1B	75.0	13.2	49.1-100.0
2A	93.8	6.7	80.7-100.0*
2B	100.0	0.0	100.0*
2C	83.8	6.9	70.3-97.3*
2D	94.4	5.8	83.0-100.0*
3A	79.0	11.1	57.2-100.0*
3B	68.2	31.8	5.9-100.0
3C	35.4	16.6	2.9-67.9
3D	37.7	4.9	28.1-47.3**
3E	16.7	7.8	1.4-32.0**
4A	54.9	17.0	21.6-88.2
4B	70.2	18.6	33.6-100.0
4C	42.9	9.1	25.1-60.7
4D	38.9	27.4	0.0-92.6
4E	48.5	13.3	22.4-74.6
5A	35.5	7.1	21.6-49.4**
5BA	53.4	13.3	27.3-79.5
5BB	93.5	3.4	86.8-100.0*
5BC	34.6	8.1	18.7-50.5
5C	29.3	4.8	19.9-38.7**
5D	51.2	6.4	38.7-63.7
5E	44.0	20.3	4.2-83.8
6A	40.0	10.7	19.0-61.0
6B	41.3	13.5	14.8-67.8
6C	67.6	7.8	52.3-82.9*
6D	71.2	6.0	59.4-83.0
6E	14.3	5.6	3.3-25.3**
Total	62.0	3.0	56.1-67.9

* Confidence intervals are entirely above .50

** Confidence intervals are entirely below .50

Table 41

Question 15--Percent Agreement to the Recommendation to Change Junior High School Boundaries, according to the Respondents' Characteristics

Item Number	Item	Chi-Square Value	Percent Agreement	Number in Sample
1.	Sex	.26		
	Male		57.4	340
	Female		59.2	390
2.	Age	51.98*		
	Less than 40 years		71.6	352
	40 years and over		46.4	384
3.	Race	89.67*		
	White		50.4	562
	Non-white		83.5	176
5.	Home Ownership	54.77*		
	Own		45.9	390
	Rent		71.8	344
6.	Berkeley Residence	83.27*		
	Five years or Less		78.5	260
	More than five years		47.3	484
7.	Voter Registration	21.88*		
	Registered		54.6	606
	Not Registered		74.5	137
8.	Presidential Election 1960	48.51*		
	Voted		52.2	565
	Did Not Vote		78.5	172
9.	"Fair Housing"-Mayoralty Election 1963	52.85*		
	Voted		48.6	451
	Did Not Vote		74.5	263
10.	Relatives in Berkeley Public School System	3.56		
	Yes		53.4	238
	No		60.7	499
11.	Education	.04		
	High School or Less		58.4	233
	At Least Some College		59.1	504
12.	Education in Berkeley Public Schools	11.94*		
	Some		43.6	117
	None		60.9	598

*Significant at .01 level

Table 42

Question 15--Interaction of Respondents' Characteristics and their Classification on the First Principal Component

Item Number	Item	Percent Agreeing			Number in Sample			Chi-Square Value
		Low	Medium	High	Low	Medium	High	
	First Principal Component	79.9	57.4	42.9	199	272	259	80.55
2.	Age							22.79
	Less than 40 years	82.4	75.0	52.3	102	164	86	
	40 years or more	77.8	33.3	36.8	99	111	174	
5.	Home Ownership							16.87
	Own	78.2	32.6	35.5	101	89	200	
	Rent	82.1	69.1	63.9	95	188	61	
6.	Berkeley Residence							15.16
	Five years or less	88.2	79.7	65.6	68	128	64	
	More than Five years	76.1	38.4	34.7	134	151	199	
8.	Presidential Election 1960							16.76
	Voted	80.3	47.1	38.3	147	191	227	
	Did Not Vote	80.8	80.2	70.6	52	86	34	
11.	Education							11.08
	High School or less	82.0	36.1	28.0	122	61	50	
	At Least Some College	81.0	63.7	46.2	79	215	210	

boundaries is .620. The standard error of the estimate is .030 and the 95 percent confidence interval for the unknown population value is $.561 < P < .679$. Since this interval is entirely above $P = .500$, it can be concluded that a majority of the population agrees with the changing of junior high school boundaries to improve racial imbalances in the schools. This result is in complete disagreement with the PTA survey. In one of those surveys only eight percent were in favor of changing the junior high school boundaries.

For the most part, this question is identical to question fourteen. The only difference between the two questions is that question fourteen asks about changing elementary school boundaries while question fifteen asks about changing junior high school boundaries. A careful comparison of the figures listed in Tables 35, 36, 37, and 38 with those of Tables 39, 40, 41, and 42 will show that the reported percentages and Chi-square values are very similar. At a first impression, this is reasonable, and the conclusion might be drawn that people answered the two questions in essentially the same way.

Post hoc analysis based on McNemar's Test of Change supports this decision. In Table 43 is shown the joint distribution of responses to questions fourteen and fifteen. The Chi-square for this table is .30, thereby supporting the impression that people tended to answer both questions in the same way. The implications of this finding should be of considerable interest to school boards with similar problems.

Table 43

Consistency of Attitude toward Changing Elementary and Junior High School Boundaries

		Question 14-Elementary School Boundary Changes			
		Agree	Disagree	Not Sure	Total
Question 15-Junior High School Boundary Changes	Agree	404	15	16	435
	Disagree	17	292	10	319
	Not Sure	32	14	113	159
	Total	453	321	139	913

On numerous occasions, school boards across the country have heard parents argue for the continuation of the neighborhood schools. One frequently heard argument is that an emergency might occur at home or school which may necessitate the immediate union of children with their parents. If the distance between the school and the home is large, then the bringing together of parent and child might be prolonged and the consequences could be very unpleasant and sorrowful. Another argument advanced for the continuation of the neighborhood schools is that long distances between home and school expose young children to increased dangers from motor vehicles and poor drivers. To this is often added the risk of possible contact with socially undesirable individuals and the unpleasant consequences that such exposure might entail. Most citizens would consider these to be legitimate arguments and very few school board members would ignore them or be expected to ignore them. Yet, note, that in this survey more than 60 percent of the informants were willing to change both the elementary and junior high school boundaries to achieve a better racial balance in the schools. For these people, improved racial balances are more important than neighborhood schools. On the other hand, forty percent of the informants objected to both recommendations. Agreement with both recommendations appears to be a position that is both consistent and reasonable. But, if an individual defends the neighborhood school concept for the reasons cited, how can the same arguments be used to argue against improving racial balances in the junior

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both recommendations were young or Negro. Those who were against both recommendations were white, over the age of forty, schooled in the community, and were for the most part homeowners. Since one would expect them to have few children in the schools, racial integration should be of little concern to them. Since they are concerned, it seems reasonable to conclude that their concern is based upon a bigoted point of view, and not upon any sound educational principle. However, it should be stated that this decision is only a hypothesis suggested by this data. It is not being proposed as having been established by this survey.

QUESTION SIXTEEN

For schools that cannot be completely integrated by changing boundary lines, the committee suggested a system of "limited open enrollment." This means that whenever there are openings non-white children may go to

Emerson from Lincoln
Thousand Oaks from Jefferson
Cragmont or Oxford from Columbus
Hillside or Whittier from Longfellow

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

It should be stated that the first mentioned school in each pair represents a school in a high SES area while the second school refers to a school in a low SES area.

Results for this item are summarized in Table 44 according to response group. More than 70 percent of the informants agreed with this recommendation. The standard error of the estimate was .028 and the 95 percent confidence interval for the population parameter was given by $.662 < P < .768$. The Chi-

Table 44

Agreement with the Recommendation to Permit Limited Open Enrollment, according to the Wave of Response (Question Sixteen)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreement to the Recommendation	68.7	66.5	73.9	71.5
Standard Error of Estimate	2.9	5.3	4.4	2.8
95% Confidence Interval	63.0-74.4	56.1-76.9	65.3-82.5	66.2-76.8

square value for this table is 4.47. Since this is below the .01 value, there is no reason to believe that attitudes to this item differ across the three response groups. This result is not in agreement with the newspaper poll value of 28.4 percent; however, it agrees quite well with the PTA survey value of 75 percent.

Agreement with the recommendation by census tract is shown in Table 45. Confidence intervals for 13 of the 28 census tracts are entirely above .50. Only two tracts have confidence intervals that are completely below .50. These two tracts have large student populations. Why they would oppose this recommendation is not obvious. As a post hoc observation, it is interesting to note that informants from the census tracts in which the 10 elementary schools named in this question are located supported the recommendation. This suggests that low SES families are willing to send their children to high SES schools. At the same time, parents in high SES areas would welcome low SES children into the schools in their neighborhoods. However, the one directional nature of the question should be noted.

As may be seen in Table 46 more than 50 percent of the informants in each category supported the recommendation. The least support was expressed by adults who had some of their education in the Berkeley school system, but even among them more than 50 percent supported the recommendation. The strongest support was expressed by nonwhites, by those who rent their

Table 45

Agreement with the Recommendation to Permit Limited Open Enrollment for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	93.5	15.4	63.3-100.0*
1B	64.3	14.0	36.9-91.7
2A	93.1	7.4	78.6-100.0*
2B	98.2	1.8	94.7-100.0*
2C	88.3	6.1	76.3-100.0*
2D	95.1	5.2	84.9-100.0*
3A	72.6	13.1	46.9-98.3
3B	27.3	3.4	20.6-34.0**
3C	71.4	9.9	52.0-90.8*
3D	39.3	5.3	28.9-49.7**
3E	86.7	6.2	74.5-98.9*
4A	53.5	18.8	16.7-90.3
4B	69.2	13.6	42.6-95.8
4C	58.2	8.8	41.0-75.4
4D	27.4	14.5	0.0-55.8
4E	63.2	13.3	37.1-89.3
5A	93.6	4.8	84.2-100.0*
5BA	68.9	12.0	45.4-92.4
5BB	62.0	5.0	52.2-71.8*
5BC	38.5	7.8	23.2-53.8
5C	69.0	7.2	54.9-83.1*
5D	62.8	4.1	54.8-70.8*
5E	65.6	16.0	34.2-97.0
6A	68.0	12.4	43.7-92.3
6B	49.3	14.3	21.3-77.3
6C	75.7	8.0	60.0-91.4*
6D	82.7	5.9	71.1-94.3*
6E	55.7	9.3	37.5-73.9
Total	71.5	2.7	66.2-76.8

* Confidence intervals are entirely above .50

** Conficence intervals are entirely below .50

Table 46

Question 16--Percent Agreeing to the Recommendation to Permit Limited Open Enrollment, according to the Respondents' Characteristics

Item Number	Item	Chi-Square Value	Percent Agree	Number in Sample
1.	Sex	.05		
	Male		69.2	344
	Female		69.9	399
2.	Age	5.66		
	Less than 40 years		73.8	363
	40 years or more		65.9	387
3.	Rac	22.53*		
	White		65.5	571
	Non-white		82.0	183
5.	Home Ownership	16.02*		
	Own		63.5	386
	Rent		76.8	357
6.	Berkeley Residence	20.99*		
	Five years and less		79.5	263
	More than Five years		64.4	491
7.	Voter Registration	1.08		
	Registered		68.9	618
	Not Registered		73.3	135
8.	Presidential Election 1960	10.47*		
	Voted		67.4	573
	Did Not Vote		79.2	173
9.	Fair Housing"-mayoralty Election 1963	8.79*		
	Voted		65.9	461
	Did Not Vote		76.2	260
10.	Relatives in Berkeley School System	.33		
	Yes		71.2	233
	No		69.8	516
11.	Education	.49		
	High School or Less		68.4	244
	At Least Some College		71.0	503
12.	Education in Berkeley Public Schools	12.19*		
	Some		55.6	117
	None		72.8	610

* Significant at .01 level

homes, by those who had lived in Berkeley less than five full years, by those who did not vote in the 1960 or 1963 local elections, and by those who were schooled in a community other than Berkeley. Again this reflects the attitudes of the Negroes and of the young adults who have immigrated into the community.

The variables which interact significantly with responses to this item are shown in Table 47. The interaction with race is of considerable interest. Among the whites in each SES level, the agreement is uniformly high; about 65 percent agree with the recommendation. However, among the nonwhites, the proportion agreeing with the recommendation decreases as the SES level of the tract increases. Within the low SES areas all nonwhites are Negro while in the high SES areas all nonwhites are Oriental.

The significant source of the interaction with education can be traced to adults in the medium SES tracts who have not completed high school. Perhaps they feel somewhat threatened by the Negro advance upon their homes, their schools, and their neighborhoods, and, therefore possess unfavorable attitudes towards the recommendation.

Finally, it should be noted that the responses to this question are in a certain sense inconsistent with the responses to questions 14 and 15. It would seem that individuals opposed to the recommendations to change school boundaries would also be opposed to the recommendation to transport children to other schools. However, as this question implies, the number of chil-

Table 47

Question 16--Interaction of Respondents' Characteristics and Their Classification on the First Principal Component

Item Number	Item	Percent Agreeing			Number in Sample			Chi-Square Value
		Low	Medium	High	Low	Medium	High	
	First Principal Component	80.7	67.0	63.6	207	267	269	20.73
3.	Race							22.91
	White	60.0	67.3	65.0	60	251	260	
	Non-white	89.3	59.1	27.3	150	22	11	
8.	Presidential Election 1960							14.06
	Voted	83.4	62.6	60.8	151	190	232	
	Did Not Vote	75.9	77.8	86.8	54	81	38	
11.	Education							13.19
	High School or Less	83.1	43.5	61.5	130	62	52	
	At Least Some College	81.6	73.6	64.8	76	208	219	

dren to be exchanged would be quite small, and therefore such a program would not be contrary to their concept of the neighborhood school. Thus, people who support the neighborhood school concept would not feel threatened if other children were moved. In all likelihood, they would not allow their children to to be moved, but they would permit Negroes to come into the high SES neighborhood school to be taught with their own children.

QUESTION SEVENTEEN

Now Berkeley schools divide children into classes on the basis of how well they did in earlier classes. This sometimes leads to racial segregation in the classrooms. The committee suggested fewer "ability groupings" be used. This would cut down on segregation and would produce classes with children who have a larger range of ability.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

The percentage distribution of responses to this item is summarized in Table 48 according to response group. As can be seen, considerable opposition was expressed to this recommendation. The combined estimate of the proportion of the adult population that agreed with the recommendation was .466 with a standard error of .031. This result was quite close to the values obtained from both PTA surveys. In one survey 57 percent favored less ability grouping; the corresponding figure for the other survey was 47 percent.

The 95 percent confidence interval for the unknown parameter is $.405 < P < .527$. Since $P = .50$ is within the interval, a reasonable conclusion is that the community is

Table 48

Agreement with the Recommendation to Reduce the Number of Ability Groups, according to the Wave of Response (Question Seventeen)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreeing to the Recommendation	30.5	38.2	56.9	46.6
Standard Error of Estimate	2.9	5.2	5.1	3.1
95% Confidence Interval	24.8-36.2	28.0-48.4	46.9-66.9	40.5-52.7

equally divided on this recommendation. However, as will be subsequently shown, this division is not uniform across the community. As may be seen in Table 48, answers to this question differed over the three response groups. Since Chi-square for this table is 20.29, the observed differences represent reliable differences in the entire population. Post hoc comparisons indicate that the differences exist between the original respondents and the interviewed informants. This is also apparent from the nonoverlapping of their respective confidence intervals. Among those responding to the original letter, only .305 favored the recommendation, while among the interviewed informants .569 agreed. As noted earlier, this increase in agreement with the recommendation across wave of response corresponds to a decrease in the percentage of informants that were white and to a decrease in the percentage of informants that were registered to vote. Respondents to the original letter tended to be white and registered to vote. At the other extreme, respondents to the interviews tended to be Negro and not registered to vote. This suggests that disagreement was shown by whites and that agreement was shown by Negroes.

Agreement with the recommendation to reduce the number of ability groupings is shown in Table 49 by census tracts. Support for the recommendation is shown by the seven census tracts with confidence intervals entirely above $P = .500$. Six of these tracts represent the lowest SES areas of the

Table 49

Agreement with the Recommendation to
Reduce the Number of Ability Groups
for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	91.3	3.6	87.7-94.9*
1B	76.7	13.6	63.1-90.3*
2A	77.2	16.4	60.8-93.6*
2B	98.2	1.8	96.4-100.0*
2C	86.4	4.1	82.3-90.5*
2D	82.5	10.6	71.9-93.1*
3A	45.5	15.9	29.6-61.4
3B	3.6	2.5	1.1-6.1**
3C	15.7	4.6	11.1-20.3**
3D	16.4	4.4	12.0-20.8**
3E	6.7	7.6	0.0-14.3**
4A	60.5	13.8	46.7-74.3
4B	47.1	20.0	27.1-67.1
4C	37.9	9.4	28.5-47.3**
4D	28.6	11.2	17.4-39.8**
4E	37.8	12.8	25.0-50.6
5A	41.9	29.8	12.1-71.7
5BA	23.5	11.2	12.3-34.7**
5BB	60.9	4.8	56.1-65.7*
5BC	23.1	7.5	15.6-30.6**
5C	3.5	2.4	1.1-5.9**
5D	27.9	6.9	21.0-34.8**
5E	23.9	15.8	8.1-39.7**
6A	32.0	11.2	20.8-43.2**
6B	27.2	17.2	10.2-44.4**
6C	41.9	7.8	34.1-49.7**
6D	15.4	5.8	9.6-21.2**
6E	31.4	8.9	22.5-40.3**
Total	46.6	3.1	40.5-52.7

*Confidence intervals are entirely above .50
**Confidence intervals are entirely below .50

community. Sixteen tracts have confidence intervals that are entirely below $P = .500$. Included in these 16 tracts are the highest SES tracts of the community. This separation of tracts further upholds the decision that Negroes favored the recommendation to reduce ability groupings. All other areas disagreed or else showed some level of indifference to the recommendation.

In Table 50 is shown the proportion of informants agreeing with the recommendation to reduce the number of ability groupings according to the demographic and socio-economic variables asked about in the first section of the questionnaire. As can be seen, the only variables that showed any association with the responses to this question were race and amount of education. Of the nonwhites, 77.4 percent supported the recommendation while only 25.8 percent of the whites supported it. Among those who had high school training or less, 54.2 percent supported the recommendation while among those who had some college training the corresponding percentage was 30.8.

In Table 51 is shown agreement with the recommendation according to the first principal component. For this question, only the main effect was significant; all interactions were not significant. In the low SES regions of the community, 69.0 percent supported the recommendation, while in the medium and high SES regions the corresponding percentages were about 26.0.

All of these analyses lead to the same conclusions. Negroes favor the recommendation to reduce ability groupings while whites and educated adults oppose it. That individuals

Table 50

Question 17--Percent Agreeing to the Recommendation to Reduce the Number of Ability Groups, according to the Responderts' Characteristics

Item Number	Item	Chi-Square Value	Percent Agreeing	Number in Sample
1.	Sex	1.88		
	Male		35.5	352
	Female		40.3	404
2.	Age	1.01		
	Less than 40 years		36.1	366
	40 years and over		39.6	394
3.	Race	202.30*		
	White		25.8	585
	Nonwhite		77.4	177
5.	Home Ownership	.98		
	Own		39.5	390
	Rent		36.0	364
6.	Berkeley Residence	.01		
	Five years or less		38.0	274
	More than five years		37.6	492
7.	Voter Registration	.79		
	Registered		37.1	620
	Not registered		41.1	146
8.	Presidential Election 1960	.14		
	Voted		37.6	577
	Did not vote		39.1	184
9.	"Fair Housing"-mayoralty election	.64		
	Voted		38.2	458
	Did not vote		35.3	275
10.	Relatives in Berkeley School System	4.11		
	Yes		43.4	235
	No		35.6	528
11.	Education	37.59*		
	High School or less		54.2	238
	At least some college		30.8	522
12.	Education in Berkeley Public Schools	.09		
	Some		35.3	116
	None		36.8	619

*Significant at .01 level

Table 51

Question 17--Interaction of Respondents' Characteristics and Their Classification on the First Principal Component

Percent Agreeing			Number in Sample			Chi-Square Value
Low	Medium	High	Low	Medium	High	
69.0	27.0	25.3	187	285	261	122.57

with some college in their background would oppose the recommendation is not surprising, since they tend to be individuals with high ability and potential. They naturally assume their children have ability and should be given training commensurate with their high potential or if they don't have children, they believe that special training should be available for high ability students. On the other hand, most Negroes have had the experience of being educated in low ability classes. Many are familiar with the kind of teaching children in low ability groups receive, and many have learned from personal experience that the skills needed for successful competition in a highly industrialized technical society are not taught in low ability classes. Finally, some may believe, with good reason, that low ability classes have detrimental effects upon the emotional and psychological development of their children.

QUESTION EIGHTEEN

The committee suggested that special teaching be given to all children who need extra help

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

Results for this question are summarized in Table 52 according to response group. For the most part, there is universal and uniform agreement with this recommendation to give special teaching to all children who need extra help. This is quite contrary to the result of the newspaper poll in which only 41.3 percent favored the recommendation. For this survey, the combined estimate of the proportion of adults agreeing with the

Table 52

Agreement with the Recommendation to Give Special Training to All Children who Need Extra Help, according to the Wave of Response (Question Eighteen)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreeing to the Recommendation	96.0	95.5	95.7	95.9
Standard Error of Estimate	1.1	2.1	1.7	1.0
95% Confidence Interval	93.8-98.2	91.4-99.6	92.4-99.0	93.9-97.9

recommendation is .959. The standard error of this estimate is .011 and the 95 percent confidence interval for the unknown parameter is $.939 < P < .979$. Since the Chi-square value for this table is only .09 there is no reason to believe that a difference in attitude exists across the three response groups.

Agreement with this recommendation is shown in Table 53 by census tracts. In every tract more than 75 percent of the sample members agreed with the recommendation, and as may be seen by examination of the confidence interval, every tract but one had a confidence interval above .50.

Agreement with the recommendation according to the characteristics of the informants is shown in Table 54. The only variable that shows any relationship to the reported attitudes is the homeowner status of the informants. While there is a significant difference in the degree of agreement shown by the homeowners and renters, the magnitude of the difference is not worthy of comment.

QUESTION NINETEEN

The committee suggested that additional qualified teachers of minority races who are qualified be hired until good teachers of all races are teaching in all schools.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

Results for this question are summarized in Table 55 according to response group. There was strong agreement with this recommendation across all three response groups. The combined estimate of the proportion of adults agreeing with the recommendation to hire more teachers of minority races was .893

Table 53

Agreement with the Recommendation to Give Special Training to All Children who Need Extra Help for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	100.0	0.0	100.0*
1B	100.0	0.0	100.0*
2A	100.0	0.0	100.0*
2B	100.0	0.0	100.0*
2C	90.9	4.6	81.9-99.9*
2D	100.0	0.0	100.0*
3A	96.5	3.5	89.6-100.0*
3B	100.0	0.0	100.0*
3C	86.4	7.3	72.1-100.0*
3D	77.0	19.9	38.0-100.0
3E	100.0	0.0	100.0*
4A	94.0	6.3	81.7-100.0*
4B	98.1	1.8	94.6-100.0*
4C	93.2	4.4	84.6-100.0*
4D	83.3	11.5	60.8-100.0*
4E	98.5	1.5	95.6-100.0*
5A	100.0	0.0	100.0*
5BA	98.3	1.7	95.0-100.0*
5BB	97.8	2.2	93.5-100.0*
5BC	100.0	0.0	100.0*
5C	84.5	9.7	65.5-100.0*
5D	100.0	0.0	100.0*
5E	100.0	0.0	100.0*
6A	92.0	8.0	76.3-100.0*
6B	95.6	4.1	87.6-100.0*
6C	100.0	0.0	100.0*
6D	98.1	1.9	94.4-100.0*
6E	96.4	2.5	91.5-100.0*
Total	95.9	1.0	94.0-97.9

*Confidence intervals are entirely above .50

Table 54

Question 18--Percent Agreeing to the Recommendation to Give Special Teaching to All Children who Need Extra Help, according to the Respondents" Characteristics

Item Number	Item	Chi-Square Value	Percent Agree	Number in Sample
1.	Sex	.62		
	Male		95.4	388
	Female		96.4	477
2.	Age	5.98		
	Less than 40 Years		97.6	422
	40 Years or More		94.4	448
3.	Race	3.52		
	White		95.3	655
	Non-white		97.7	219
5.	Home Ownership	7.23*		
	Own		94.0	435
	Rent		97.7	427
6.	Residence in Berkeley	5.45		
	Five Years or Less		97.8	313
	More than Five Years		94.8	562
7.	Voter Registration	4.89		
	Registered		95.3	707
	Not Registered		98.2	167
8.	Presidential Election 1960	.42		
	Voted		95.7	656
	Did Not Vote		96.7	211
9.	"Fair Housing"-mayoralty Election 1963	6.50		
	Voted		94.5	512
	Did Not Vote		97.8	322
10.	Relatives in Berkeley School System	2.53		
	Yes		97.3	262
	No		95.2	608
11.	Education	.35		
	High School or Less		95.4	281
	At Least Some College		96.3	587
12.	Education in Berkeley Public Schools	.04		
	Some		96.2	130
	None		95.8	710

*Significant at .01 level

Table 55

Agreement with the Recommendation to
Hire More Teachers of Minority Races
according to the Wave of Response
(Question Nineteen)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreeing to the Recommendation	86.8	85.5	91.6	89.3
Standard Error of Estimate	2.0	3.7	2.3	1.5
95% Confidence Interval	82.9-90.7	78.2-92.8	87.1-96.1	86.4-92.2

with a standard error of .015. The 95 percent confidence interval for the unknown population parameter is $.864 < P < .922$. The Chi-square value for this table is 3.19; therefore, it is reasonable to conclude that attitudes toward this recommendation are independent of the response group to which the informant belongs.

Agreement with this recommendation is shown in Table 56 by census tract. In every tract, more than 70 percent of the informants indicated that they agreed with the recommendation. Furthermore, in 27 of the 28 tracts, the 95 percent confidence intervals for the unknown parameters are entirely above .50.

Agreement with the recommendation according to the characteristics of the informants is shown in Table 57. In this case, whites showed significantly less agreement with the recommendation than did the nonwhites, but the overall level is so high that one would conclude that both groups support the recommendation. Homeowners showed less support as did informants who voted in the 1963 fair housing election. However, the relative magnitudes of the differences are not of "real" interest or significance since there is overwhelming agreement with this recommendation.

QUESTION TWENTY

The committee suggested that more day-care centers and nursery schools be set up to let more children attend

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

Results for this question are summarized in Table 58

Table 56

Agreement with the Recommendation to Hire More Teachers of Minority Races for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	97.8	2.4	93.1-100.0*
1B	100.0	0.0	100.0*
2A	97.1	3.1	91.0-100.0*
2B	100.0	0.0	100.0*
2C	100.0	0.0	100.0*
2D	94.9	5.4	84.3-100.0*
3A	100.0	0.0	100.0*
3B	100.0	0.0	100.0*
3C	92.9	3.2	86.6-99.2*
3D	73.0	19.3	35.2-100.0
3E	96.7	3.8	89.3-100.0*
4A	86.0	8.2	69.9-100.0*
4B	86.0	11.9	62.7-100.0*
4C	75.9	6.8	62.6-89.2*
4D	78.6	13.4	52.3-100.0*
4E	79.7	6.8	66.4-93.0*
5A	96.8	3.7	89.6-100.0*
5BA	91.5	4.3	83.1-99.9*
5BB	97.8	2.1	93.7-100.0*
5BC	92.3	5.4	81.7-100.0*
5C	75.9	6.0	64.1-87.7*
5D	100.0	0.0	100.0*
5E	86.8	12.5	62.3-100.0*
6A	84.0	11.3	61.9-100.0*
6B	93.5	3.5	86.6-100.0*
6C	70.3	2.7	60.0-75.6*
6D	86.5	5.6	75.5-99.5*
6E	83.9	5.9	72.3-95.5*
Total	89.3	1.5	86.4-92.2

*Confidence intervals are entirely above .50

Table 57

Question 19--Percent Agreeing to the Recommendation to Hire More Teachers of Minority Races, according to the Respondents' Characteristics

Item Number	Item	Chi-Square Value	Percent Agree	Number in Sample
1.	Sex	.31		
	Male		87.3	363
	Female		88.6	439
2.	Age	.14		
	Less than 40 Years		88.5	390
	40 Years or More		87.6	420
3.	Race	41.70*		
	White		84.9	609
	Non-white		97.0	202
5.	Home Ownership	15.33*		
	Own		83.2	404
	Rent		92.2	396
6.	Berkeley Residence	5.53		
	Five Years or Less		91.3	286
	More than Five Years		86.0	527
7.	Voter Registration	6.29		
	Registered		86.8	657
	Did Not Register		92.9	155
8.	Presidential Election 1960	4.24		
	Voted		86.7	611
	Did Not Vote		91.7	193
9.	"Fair Housing"-mayoralty Election	14.21*		
	Voted		84.6	479
	Did Not Vote		92.9	297
10.	Relatives in Berkeley School System	3.32		
	Yes		84.5	245
	No		89.3	562
11.	Education	1.15		
	High School or Less		89.6	259
	At Least Some College		87.0	547
12.	Education in Berkeley Public Schools	1.84		
	Some		83.5	121
	None		88.4	661

*Significant at .01 level

Table 58

Agreement with the Recommendation to Set Up More Day Care Centers and Nursery Schools according to the Wave of Response (Question Twenty)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreeing to the Recommendation	83.5	85.2	93.5	89.7
Standard Error of Estimate	2.3	3.9	2.3	1.6
95% Confidence Interval	79.0-88.0	77.6-92.8	89.0-98.0	86.6-92.8

according to response group. Chi-square for this table is 10.06. With two degrees of freedom this means that differences in attitudes exist among the three sets of informants. On the basis of a post hoc multiple comparison analysis, the source of the difference can be attributed to differences in attitudes between the original respondents and the interviewed informants. Even so, agreement with this recommendation is extremely high. The combined estimate of the proportion of adults agreeing with the recommendation to operate more day-care and nursery schools is .897 with a standard error of .016. The 95 percent confidence interval for the unknown parameter is $.866 < P < .928$. Corresponding figures are shown in Table 59 for the individual census tracts.

While there is nearly universal agreement with this recommendation, the figures in Table 60 show that differences in attitude exist on a number of the variables. For example, females show a stronger preference for these programs than do males. This might reflect their eagerness to have nursery schools and day-care centers available for the care and school preparation of their children. People under 40 favored the program more than people over 40. Since they are more apt to have children who would use these facilities, this result is not too surprising. Nonwhites showed more support than whites. It could be that many of them see themselves and their children as possible beneficiaries of these kinds of programs. Homeowners supported the program but less than did renters; perhaps they view programs similar to these as leading to tax increases on their property. Explana-

Table 59

Agreement with the Recommendation to Set Up More Nursery Schools and Day Care Centers for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	81.0	12.9	55.7-100.0*
1B	97.7	2.4	93.0-100.0*
2A	100.0	0.0	100.0*
2B	100.0	0.0	100.0*
2C	85.0	6.5	72.3-97.7*
2D	100.0	0.0	100.0*
3A	100.0	0.0	100.0*
3B	96.4	2.6	91.3-100.0*
3C	66.6	17.8	31.7-100.0
3D	95.1	3.5	88.2-100.0*
3E	90.0	4.0	82.2-97.8*
4A	90.6	8.1	74.7-100.0*
4B	94.2	3.8	86.8-100.0*
4C	81.1	6.5	68.4-93.8*
4D	79.2	14.1	51.6-100.0*
4E	97.0	2.0	93.1-100.0*
5A	96.8	3.2	90.5-100.0*
5BA	86.4	4.7	77.2-95.6*
5BB	97.8	2.3	93.3-100.0*
5BC	100.0	0.0	100.0*
5C	81.0	5.6	70.0-92.0*
5D	93.0	5.1	83.0-100.0*
5E	80.2	17.9	45.1-100.0
6A	80.0	11.0	58.4-100.0*
6B	91.3	4.7	82.1-100.0*
6C	86.5	6.5	73.8-99.2*
6D	92.3	4.4	83.7-100.0*
6E	78.6	6.3	66.3-90.9*
Total	89.7	1.6	86.6-92.8

* Confidence intervals are entirely above .50

Table 60

Question 20--Percent Agreeing to the Recommendation to Set Up More Nursery Schools and Day Care Centers, according to the Respondents' Characteristics

Item Number	Item	Chi-Square Value	Percent Agree	Number in Sample
1.	Sex	7.21*		
	Male		82.9	316
	Female		89.9	414
2.	Age	13.34*		
	Less Than 40 Years		91.2	353
	40 Years or More		82.2	382
3.	Race	13.59*		
	White		83.9	541
	Non-white		92.9	196
5.	Home Ownership	12.45*		
	Own		81.9	371
	Rent		90.8	359
6.	Berkeley Residence	9.05*		
	Five Years or Less		91.1	259
	More Than Five Years		83.8	481
7.	Voter Registration	16.15*		
	Registered		84.5	600
	Not Registered		94.3	141
8.	Presidential Election 1960	6.63*		
	Voted		84.8	559
	Did Not Vote		91.5	176
9.	"Fair Housing"-mayoralty Election	15.88*		
	Voted		82.6	431
	Did Not Vote		92.3	273
10.	Relatives in Berkeley School System	.70		
	Yes		84.8	230
	No		87.1	505
11.	Education	.08		
	High School or Less		86.9	245
	At Least Some College		86.2	492
12.	Education in Berkeley Public Schools	.01		
	Some		86.2	109
	None		85.8	599

* Significant at .01 level

tions could be offered for the significant effects of length of time lived in Berkeley, voter registration, vote in the 1960 election, and vote in the 1963 election. However, since the agreement is at a high level throughout, it would seem that a discussion of these points would be mainly academic and of little practical importance.

QUESTION TWENTY-ONE

If more day-care centers and nursery schools are set up, the committee suggested that they be set up to permit a greater integration of the races than is found at present.

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

As may be seen by examining the figures in Table 61, the public agrees with this recommendation. The combined estimate of the proportion of adults agreeing with the recommendation is .856 with a standard error of .028. The 95 percent confidence interval for the unknown parameter is $.819 < P < .893$. However, a small degree of opposition is expressed by some of the informants to the original letter and to the follow up letter. Furthermore, these differences are statistically significant since Chi-square is 11.16. According to a post hoc multiple comparison analysis, none of the simple differences are significant. However, responses of the interviewed informants are statistically different from the combined sample of original and follow up informants. Finally, not one census tract opposed the recommendation since all confidence intervals shown in Table 62 are above $P = .500$.

In Table 63 is shown the amount of agreement towards the

Table 61

Agreement with the Recommendation to Integrate Day Care Centers and Nursery Schools according to the Wave of Response (Question Twenty-one)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreeing to the Recommendation	79.2	77.1	90.6	85.6
Standard Error of Estimate	2.5	4.8	2.8	1.9
95% Confidence Interval	74.3-84.1	67.7-86.5	85.1-96.1	81.9-89.3

Table 62

Agreement with the Recommendation to Integrate Nursery Schools and Day Care Centers for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	82.1	15.9	50.9-100.0*
1B	100.0	0.0	100.0*
2A	97.1	3.1	91.0-100.0*
2B	100.0	0.0	100.0*
2C	100.0	0.0	100.0*
2D	100.0	0.0	100.0*
3A	100.0	0.0	100.0*
3B	100.0	0.0	100.0*
3C	80.5	11.8	57.4-100.0*
3D	95.1	3.5	88.2-100.0*
3E	83.3	9.4	64.9-100.0*
4A	91.5	7.3	77.2-100.0*
4B	85.8	15.5	55.4-100.0*
4C	92.5	4.5	83.7-100.0*
4D	73.2	1.9	69.5-76.9*
4E	100.0	0.0	100.0*
5A	100.0	0.0	100.0*
5BA	94.9	3.3	88.5-100.0*
5BB	97.8	2.2	93.5-100.0*
5BC	96.2	3.9	88.6-100.0*
5C	96.6	2.4	91.9-100.0*
5D	93.0	3.9	85.4-100.0*
5E	100.0	0.0	100.0*
6A	92.0	7.9	76.5-100.0*
6B	97.8	2.4	93.1-100.0*
6C	100.0	0.0	100.0*
6D	94.2	4.2	86.0-100.0*
6E	94.6	3.8	87.2-100.0*
Total	85.6	1.9	81.9-89.3

* Confidence intervals are entirely above .50

Table 63

Question 21--Percent Agreeing to the Recommendation to Integrate Day Care Centers and Nursery Schools, according to the Respondents' Characteristics

Item Number	Item	Chi-Square Value	Percent Agree	Number in Sample
1.	Sex	.64		
	Male		80.5	334
	Female		82.8	402
2.	Age	38.33*		
	Less Than 40 Years		90.3	373
	40 Years or More		73.2	370
3.	Race	86.81*		
	White		76.2	555
	Non-white		96.8	189
5.	Home Ownership	38.78*		
	Own		72.4	359
	Rent		90.0	379
6.	Berkeley Residence	53.68*		
	Five Years or Less		92.9	283
	More Than Five Years		74.4	464
7.	Voter Registration	28.05*		
	Registered		78.7	605
	Not Registered		93.0	143
8.	Presidential Election 1960	38.04*		
	Voted		77.7	561
	Did Not Vote		93.4	182
9.	"Fair Housing"-mayoralty Election	40.02*		
	Voted		74.6	429
	Did Not Vote		91.5	283
10.	Relatives in Berkeley School System	.38		
	Yes		80.2	222
	No		82.1	520
11.	Education	5.01		
	High School or Less		76.7	236
	At Least Some College		83.9	508
12.	Education in Berkeley Public Schools	7.46*		
	Some		70.2	104
	None		83.1	616

* Significant at .01 level

recommendation according to the characteristics of the informants. In Table 64 is shown the amount of agreement according to the first principal component. If the numbers in these tables are compared to the corresponding numbers in the comparable tables for questions 14 and 15, it will be found that the patterns of variation existing in the two sets of three tables are very similar even though they are at different levels of magnitude. This suggests similarity of responses to these three questions. The one element that these three questions have in common is their references to the integration of the races. The similarity of response to these three items suggests that opposition is being expressed to integration itself and not against administrative practices to improve racial balances and personal relationships in the schools. Furthermore, the response patterns suggest the existance of a group of individuals who are against the integration of elementary schools, who are against the integration of junior high schools, and who are against the integration of day-care centers and nursery schools. In short, there are citizens in the sample who are against integration in any form. By implication, these people are speaking for their counterparts in the population.

Further evidence supporting this conclusion is shown in Tables 65, 66, and 67, which were based on post hoc classifications. As may be seen, individuals who favor the recommendation to integrate the nursery and day-care centers tend to agree with the recommendations to integrate the elementary and junior high schools. However, individuals who disagree with the recommenda-

Table 64

Question 21--Interaction of Respondents' Characteristics and Their Classification on the First Principal Component

Item Number	Item	Percent Agreeing			Number in Sample			Chi-Square Value
		Low	Medium	High	Low	Medium	High	
2.	Age							18.06
	Less Than 40 Years	95.1	93.3	79.1	103	179	91	
	40 Years or More	93.3	66.7	64.4	105	102	163	
5.	Home Ownership							23.03
	Own	94.8	65.8	63.6	96	76	187	
	Rent	93.4	89.2	87.0	106	204	69	
6.	Berkeley Residence							21.62
	Five Years or Less	95.7	93.7	88.6	70	143	70	
	More than Five Years	93.4	71.4	62.8	136	140	188	
8.	Presidential Election 1960							10.76
	Voted	93.4	77.8	66.8	152	189	220	
	Did Not Vote	96.2	93.5	88.9	53	93	36	
9.	"Fair Housing"-mayoralty Election 1963							10.65
	Voted	93.0	73.9	63.1	115	138	176	
	Did Not Vote	97.5	91.7	84.5	80	132	71	
11.	Education							24.32
	High School or Less	94.7	56.1	51.1	132	57	47	
	At Least Some College	93.5	89.2	74.5	77	223	208	

*Significant at .01 level

Table 65

Consistency of Response to Questions 14 and 21 Concerning the Changing of Elementary School Boundaries and the Integration of Nursery Schools and Day Care Centers

Question 14 Changing Elementary School Boundaries to Improve Racial Balance		Question 21 Integration of Nursery Schools and Day Care Centers Agree	 Disagree	 Total
	Agree	413	5	418
	Disagree	102	130	232
	Total	515	135	750

Table 66

Consistency of Response to Questions 15 and 21 Concerning the Changing of Junior High School Boundaries and the Integration of Nursery Schools and Day Care Centers

		Question 21 Integration of Nursery Schools and Day Care Centers		
Question 15 Changing Junior High School Boundaries to Improve Racial Balance		Agree	Disagree	Total
	Agree	397	7	404
	Disagree	102	130	232
	Total	499	137	636

Table 67

Consistency of Response to Questions 20 and 21 Concerning the Creation of More Nursery Schools and Day Care Centers and their Integration

		Question 21 Integration of Nursery Schools and Day Care Centers		
		Agree	Disagree	Total
Question 20 Establishment of More Nursery Schools and Day Care Centers	Agree	527	55	582
	Disagree	19	64	83
	Total	546	119	665

tion to integrate the nursery schools are almost certain to oppose the recommendations to integrate the elementary and junior high schools. Thus, of the 750 informants, 130, or 17 percent were against all three recommendations to integrate the school system. This suggests the operation of bigotry on the part of these individuals. For the most part, they are older, they are white, they are homeowners, they are long term residents of the community, they are registered to vote, and they have been schooled in the survey community.

The figures in these tables also may be used to answer some questions left unanswered in the discussion of questions 14 and 15. One of the reasons that could be offered for not agreeing with the recommendation to change school boundaries is that changes might expose children to higher risks of auto injuries and to the danger of being far from home when emergencies arise. Certainly individuals who disagree with the recommendation to change elementary school boundaries on these bases could not present the same arguments opposing the recommendation to integrate the day-care centers and the nursery schools since parents would have to take their preschool children to these centers either by automobile, public transportation, or by personal escorting.

Of the 232 adults who opposed the recommendation to change elementary school boundaries, 102, or 44 percent did not oppose the recommendation to integrate the nursery schools. For these people, it could well be that their opposition to changing elementary school boundaries did not have a racial and prejudiced base; however, for the remaining 130, it is difficult to find any other explanation than bigotry.

QUESTION TWENTY-TWO

The committee suggested that the present summer school program be expanded to serve all children

(1) ___ I agree
(2) ___ I disagree
(3) ___ I am not sure

The public agrees with this recommendation as may be noted by examining the figures in Table 68. The combined estimate for the parameter is .943, the standard error of the estimate is .010 and the 95 percent confidence interval is given by $.916 < P < .970$. Chi-square for this table is .31. This suggests the observed differences can be attributed to chance. Agreement by census tract is shown in Table 69. Agreement by informant characteristics is shown in Table 70. While some of the differences are statistically reliable, they are not large enough to be of any practical interest.

QUESTION TWENTY-THREE

Do you have any comments you wish to make? If so, please write them on another sheet of paper and include them with the questionnaire in the provided return envelope.

This item was included on the questionnaire for two reasons. It was thought that if respondents could be lead to believe that personal involvement and comments were truly wanted, then the probability of responding to the questionnaire items would be increased. In addition, the previous questionnaire items were very specific and left many areas of inquiry unsampled. Since other recommendations and points of view may have been more

Table 68

Agreement with the Recommendation to Expand the Present Summer School Program to Serve All Children According to the Wave of Response (Question Twenty-two)

	Wave of Response			
	Response to Original Letter	Response to Follow-up Letter	Response to Interview	Total
Percent Agreeing to the Recommendation	93.4	93.5	94.9	94.3
Standard Error of Estimate	1.5	3.2	2.5	1.4
95% Confidence Interval	90.4-96.4	87.2-99.8	90.0-99.8	91.6-97.0

Table 69

Agreement with the Recommendation to Expand the Present Summer School Program to Serve All Children for each of the 28 Census Tracts

Census Tract	Percent Agreement	Standard Error	95% Confidence Limits
1A	97.8	2.3	93.3-100.0*
1B	100.0	0.0	100.0*
2A	100.0	0.0	100.0*
2B	100.0	0.0	100.0*
2C	95.7	3.5	88.8-100.0*
2D	94.9	5.5	84.1-100.0*
3A	100.0	0.0	100.0*
3B	100.0	0.0	100.0*
3C	64.9	12.0	41.4-88.4
3D	64.9	25.0	15.9-100.0
3E	80.0	8.5	63.3-96.7*
4A	77.8	11.7	54.9-100.0*
4B	83.0	14.0	55.6-100.0*
4C	72.8	8.0	57.1-88.5*
4D	59.6	24.4	11.8-100.0
4E	92.5	3.5	85.6-99.4*
5A	69.4	29.0	12.6-100.0
5BA	85.2	7.8	69.9-100.0*
5BB	97.8	2.3	93.3-100.0*
5BC	92.3	4.5	83.5-100.0*
5C	77.6	6.6	64.7-90.5*
5D	93.0	4.8	83.6-100.0*
5E	89.7	10.5	69.1-100.0*
6A	64.0	9.1	46.2-81.8
6B	66.7	15.1	37.1-96.3
6C	81.1	6.8	67.8-94.4*
6D	86.5	5.0	76.7-96.3*
6E	71.4	6.7	58.3-84.5*
Total	94.3	1.4	91.6-97.0

* Confidence intervals are entirely above .50

Table 70

Question 22--Percent Agreeing to the Recommendation to Expand the Present Summer School Program to Serve All Children, according to the Respondents' Characteristics

Item Number	Item	Chi-Square Value	Percent Agree	Number in Sample
1.	Sex	2.25		
	Male		93.1	349
	Female		95.6	435
2.	Age	7.34*		
	Less Than 40 Years		96.6	388
	40 Years or More		92.3	401
3.	Race	12.49*		
	White		93.0	585
	Non-white		98.0	205
5.	Home Ownership	5.16		
	Own		92.4	393
	Rent		96.1	388
6.	Berkeley Residence	12.05*		
	Five Years or Less		97.6	290
	More Than Five Years		92.4	502
7.	Registration	5.32		
	Registered		93.6	641
	Not Registered		97.4	151
8.	Presidential Election 1960	10.20*		
	Voted		93.3	594
	Did Not Vote		97.9	192
9.	"Fair Housing"-mayoralty Election 1963	7.34*		
	Voted		92.7	463
	Did Not Vote		96.9	293
10.	Relatives in Berkeley School System	.13		
	Yes		94.0	249
	No		94.6	539
11.	Education	.02		
	High School or Less		94.2	260
	At Least Some College		94.5	527
12.	Education in Berkeley Public Schools	.53		
	Some		93.0	115
	None		94.9	645

* Significant at .01 level

important to certain individuals, it was felt that the informants should be given the opportunity to express themselves in as free and unhindered a manner as was possible. Interestingly, a large number of respondents did take this opportunity to tell the Superintendent and the School Board exactly what they thought.

The analysis and interpretation of volunteered free responses are always difficult to undertake and successfully carry out. In general, people who offer free comments are different on many personality, political, and socio-economic dimensions from those who do not. Since many of the respondents felt stronly enough about some of the recommendations to make comments, this alone would suggest the existence of basic differences from those who did not. However, freely offered responses are, nonetheless, of interest. For this reason, each comment has been carefully read by an "unbiased" reader and classified into one of seven broad rubrics. Within each of these rubrics, a number of subclassifications were made that were suggested by the responses. While the interpretation of such data is always fraught with subjectivity and possible error, it would seem that an attempt should be made to extract from the responses as much information as is possible that would help to explain some of the variations in attitudes across various population groups.

To assist in the interpretation, the comments of the 303 letters printed in the Berkeley Daily Gazette have also been read and classified under the same procedure used for the survey questionnaire comments. Both sets of comments were offered by citizens under their own volition, and are, in this sense, comparable. It should be mentioned that interviewed informants offered no comments.

The results of this content analysis classification are summarized in Table 71. Among the survey comments, 505 different expressions of attitude were noted. Among the newspaper poll comments, 362 different expressions of attitudes were noted. Among the survey comments, 24.2 percent were related to the recommendations concerned with the changing of elementary school boundaries. Essentially the same proportion of comments were made in the newspaper poll on this same issue. However, the subclassification percentage breakdown within the two polls is quite different. Among the survey comments related to school boundary changes, 27.9 percent supported the idea of school boundary changes to improve racial imbalances. The corresponding figure for the newspaper poll was 3.2 percent. Among the newspaper poll comments, 88.2 percent either supported the neighborhood school concept or else questioned the utility in changing present boundaries. The corresponding percentage for the survey comments was 57.4 percent.

Among the newspaper poll and survey comments the proportion favoring compensatory education for minority groups are, respectively, 15.7 and 18.4 percent. The tone of the comments in both polls are very similar. In both cases, the expressed feeling appears to be that compensatory education is the panacea to solve all the cultural deprivation problems of minority groups, even without school integration. While the argument is reasonable it seems to have a rationalization element within it.

Table 71

Content of Comments Made by Informants to the Controlled De Facto Segregation Survey and to the Berkeley Gazette Newspaper Poll

	Survey	Gazette Poll
Boundary Change	(24.2)	(25.7)
1. Supports Princeton, Ramsey Plan or Bussing	27.9	3.2
2. Supports Neighborhood Schools	36.9	45.2
3. Questions Value of Change	20.5	43.0
4. Wants a Study of Residential Pattern as Well	14.8	8.6
Compensatory Education	(18.4)	(15.7)
1. Questions Need for Expansion	9.7	12.3
2. Questions Cost	8.6	12.3
3. Wants Equal Opportunity for All--no special education, no publicly supported child care for pre-schoolers	16.1	22.8
4. Wants Expanded Summer School	12.9	1.8
5. Wants Cheaper Neighborhood Child Care	24.7	0.0
6. Wants Special Classes for those with Enviromental Deficiencies	28.0	50.9
Ability Grouping Reduction	(16.8)	(1.4)
1. Favors Reduction	12.9	0.0
2. Favors Flexible Grouping and re-evaluation of Counseling	18.8	0.0
3. Opposes-claims most able (or All) Students will be penalized	68.2	100.0
Confidence in Board	(13.3)	(25.1)
1. Threatens removal of Board;removal of Children from Public Schools; retreat to Suburbs	6.0	15.4
2. Accuses Committee of Bias	16.4	27.5
3. Supports Board	28.3	26.4
4. Wants Implementation of Proposals	40.3	23.1
5. Claims Board is not doing enough	9.0	7.7
Integration	(13.3)	(22.4)
1. More interested in "education"	37.3	51.8
2. Supports segregation of ability,etc.	17.9	21.0
3. Against Integration per se	4.5	4.9
4. Views Integration as Ethical, not civic problem(family responsibility)	26.9	12.3
5. Wants self-selp program for Negroes (cities other minorities)	13.4	9.9

Table 71

Content of Comments Made by Informants to the Controlled De Facto Segregation Survey and to the Berkeley Gazette Newspaper Poll

	Survey	Gazette Poll
Boundary Change	(24.2)	(25.7)
1. Supports Princeton, Ramsey Plan or Bussing	27.9	3.2
2. Supports Neighborhood Schools	36.9	45.2
3. Questions Value of Change	20.5	43.0
4. Wants a Study of Residential Pattern as Well	14.8	8.6
Compensatory Education	(18.4)	(15.7)
1. Questions Need for Expansion	9.7	12.3
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4. Wants Expanded Summer School	12.9	1.8
5. Wants Cheaper Neighborhood Child Care	24.7	0.0
6. Wants Special Classes for those with Enviromental Deficiencies	28.0	50.9
Ability Grouping Reduction	(16.8)	(1.4)
1. Favors Reduction	12.9	0.0
2. Favors Flexible Grouping and re-evaluation of Counseling	18.8	0.0
3. Opposes-claims most able (or All) Students will be penalized	68.2	100.0
Confidence in Board	(13.3)	(25.1)
1. Threatens removal of Board;removal of Children from Public Schools; retreat to Suburbs	6.0	15.4
2. Accuses Committee of Bias	16.4	27.5
3. Supports Board	28.3	26.4
4. Wants Implementation of Proposals	40.3	23.1
5. Claims Board is not doing enough	9.0	7.7
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2. Supports segregation of ability,etc.	17.9	21.0
3. Against Integration per se	4.5	4.9
4. Views Integration as Ethical, not civic problem(family responsibility)	26.9	12.3
5. Wants self-selp program for Negroes (cities other minorities)	13.4	9.9

Table 71 --continued

	Survey	Gazette Poll
Personnel	(8.3)	(0.0)
1. Supports present policy	11.9	0.0
2. Protests racial quota in hiring	71.4	0.0
3. Requests Clarification	16.7	0.0
Limited Open Enrollment	(.5.7)	(9.7)
1. Opposes "color conscious" Policy	27.6	57.1
2. Wants voluntary open enrollment	58.6	28.6
3. Wants unlimited open enrollment	13.8	14.3

For example, an individual could believe in better education for all children and actually support these programs with financial assistance, and then conveniently deny the programs to integrate schools as being unnecessary since the schools would be doing enough by improving the education of minority group children through compensatory education programs. Clearly, verbal and financial support for compensatory education programs relieves the consciences of individuals who are basically prejudiced against minority race members.

Many of the comments suggest that the public is blind to the reality that education does not necessarily enable minority group members to rise psychologically, socially, and economically, nor does the public seem to want to believe that it is not only the lack of education that keeps minority groups down.

Ability grouping was mentioned in 16.8 percent of the survey comments, and among the 68 percent opposed the reduction in the number of ability groupings. Among the newspaper poll comments, only 1.4 percent mentioned this program change. The reasons that the newspaper poll respondents did not mention this item is that the newspaper poll did not ask about it, and furthermore, the public does not think about this subject unless it is specifically asked about it. The 68 percent opposition corresponds to the general opposition expressed by the survey informants to the questionnaire item concerned with this program change. Since 17 percent of the total comments are related to this item, it would suggest that the public is concerned with the issue to reduce the number of ability groupings.

Among the newspaper poll comments, 25 percent were related to confidence in the school board. Among these comments, 42.9 percent were opposed to the Board and its action. In the survey comments, the corresponding percentage was only 22.4 percent.

Of the survey comments 13.3 percent were directly related to school integration while among the newspaper poll comments, 22.4 percent were concerned with school integration. As expected, almost all comments were antagonistic. This might reflect the normal tendency for supporters of a proposition not to voice an opinion or statement about it. In general, negative attitudes are more frequently expressed toward controversial subject than are positive attitudes.

Since not many comments were made about the remaining two items, the reader may make his own analysis and interpretations.

CONCLUSIONS

SECTION ONE: DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF THE SAMPLE MEMBERS

I. Specific Conclusions

1. The sex distribution of the sample corresponded favorably with the sex distribution of the community at the time of the 1960 census. Neither males nor females were incorrectly represented in the survey.

2. The age distribution of the sample was slightly displaced to a younger age than that existing in the community

at the time of the 1960 census. However, this apparent displacement might not have represented a true displacement but might only have reflected the general post World War II shift in the age distribution of the entire nation to a younger population. Even if this represented an age bias among the survey informants, the error was not serious. The attitudes of young adults are perhaps more important than those of their older counterparts since more of their children will be entering the public school system in the ensuing years.

3. Negroes did not respond in representative proportions to the original letter mailed to the entire 1,400 sample members. Information for them was obtained finally through the interview program.

4. Informants to the original and follow up letters tended to be homeowners. However, the final sample contained a fair representation of homeowners since the majority of the interviewed informants were renters.

5. Informants tended to be newer citizens of the community. Forty-seven percent had lived in the community less than 10 years. This result reflected the academic nature of the community. Many young people had been attracted to the community by the University of California.

6. The sample was over represented with adults who claimed to be registered voters. Assuming that registered voters tend to include many individuals with strong social, economic, and political involvement with or commitmet to the community, it would follow that the sample should have contained

a large number of individuals aware of the racial problems existing in the schools.

7. Personal association with the school system was somewhat low among the informants. Thirty percent had relatives as students or employees in the school system. This suggests that informants tended to be citizens who had a point of view to express concerning the recommendations to solve the community's de facto segregation problems. Since their personal involvement with the schools was at a low level, their reasons for answering the questions must be based upon some personal commitments with the community.

8. The median education attainment of the informants was exceptionally high. The median years of schooling was 13.0 years. In addition, 66 percent of the informants had some college training. Clearly, the informants represented points of view possessed by educated individuals of the community. While this sample might not have reflected the educational attainment level of most urban Northern communities, it did provide a fair representation of the survey community. Berkeley is a college town. Its people have an academically oriented background because of the geographic presence of the University of California in its very center. Whether the conclusions of the survey may be generalized to other communities with less education is problematical. However, what is reported here should be of invaluable concern to other communities with similar problems.

9. Most people who answered the questionnaire items were schooled in communities other than the survey community.

About 10 percent had both elementary and secondary education in the community.

10. Approximately 90 percent of the informants claimed that they had heard of the report in which the recommendations to reduce racial imbalances in the schools had first been presented. This correlates well with the high educational attainment level of the informants and their high voter registration percentages. However, while many adults in high SES areas had read the report, adults in low SES areas had not.

II. General Conclusions

1. The sample provided a fair representation of the survey community. The only major exception to this statement was that a large part of the informants claimed to be registered voters. If registration to vote goes along with a number of other variables related to the involvement and commitment of the individual with the community, then the sample contained a large number of individuals aware of the de facto segregation problems of the community. Since 90 percent knew of the de facto segregation study report, this also suggests a significant amount of social awareness on the part of the informants.

SECTION TWO: ATTITUDES OF THE SAMPLE MEMBERS TOWARD THE RECOMMENDATIONS

I. Specific conclusions

1. The community supported the recommendation to change elementary school boundaries to achieve better racial balances in the schools. Over 60 percent of the informants favored this

recommendation. Individuals agreeing with the recommendation were either Negroes or young white adults. In general, school boards and superintendents should expect opposition to be voiced by the white established residents of the community. In general, they are older, they are homeowners, they went to school in the community, and they have lived in the community for a number of years.

2. The community looked with favor upon the recommendation to change junior high school boundaries. Over 60 percent of the informants found this to be an acceptable recommendation. Individuals who agreed to changing elementary school boundaries also agreed to changing the junior high school boundaries to achieve racial integration in the schools. At the same time, expressed opposition to one recommendation was correlated to expressed opposition to the other recommendation.

3. Limited open enrollment plans were endorsed by the community's citizens. Among the informants 70 percent found this to be an acceptable program to promote racial integration of the schools that could not be easily integrated by school boundary changes. If other communities are like Berkeley, then school boards and superintendents should not expect strong opposition to programs such as this.

4. The recommended limited open enrollment plan was very strongly favored by individuals living in the neighborhoods of the schools explicitly named by the de facto segregation study committee. Since the recommended program involved the

transfer of Negro children from low SES schools to high SES schools, it follows that white parents in high SES schools are not adverse to having their children mix with Negro children from low SES areas. At the same time, Negro parents are quite willing to have their children attend schools where it is known that the educational facilities and teaching are of excellent quality. Since transfers would normally involve the children of upper class Negro families or else Negro children of high ability, it is easy to understand the favor adults place in this kind of program.

5. Programs to reduce the number of ability groupings in the schools were not viewed with favor by a large number of informants. About 45 percent favored the reduction of ability groupings. However, when this attitude was examined under finer classifications and subdivisions, it was noted that race and education tended to divide the informants on this question. Negroes favored the reduction in the number of ability groupings while whites did not. Among the nonwhites, about 75 percent viewed the recommendation to reduce the number of ability groups with favor. Among the whites only 25 percent agreed with the recommendation to reduce the number of ability groupings. Among people with some college training only 30 percent favored the reduction in the number of ability groupings. Among people with no college training more than 50 percent favored the reduction in the number of ability groupings. This was the only questionnaire item that whites showed definite disfavor with.

Whites have been told so repeatedly of the advantages of ability grouping that many have come to believe them unconditionally. Most are unaware of the contradictory and puzzling research findings reported in the professional literature about the effect of ability grouping on achievement and emotional growth. They would probably deny their truth even if given the facts. Many Negroes, on the other hand, have been trained, for the most part, in low ability classes. For many of them, knowledge concerning the poor presentation of school subjects has been gained from their own unfavorable experiences in the schools as children. They tend to be familiar with the kind of teaching their children receive in low ability classes since they once received the very same kind of teaching as students. Many understand the kind of psychological and emotional problems their children are facing since they once faced the very same problems as children. Clearly, white support of ability grouping and Negro opposition to ability grouping are two factors school boards and superintendents will have to balance where ever this problem is discussed.

6. Special teaching for children who need extra help is universally ascribed to in the community. Approximately 95 percent of the sample members agreed with this recommendation. Superintendents and school boards should have little difficulty in establishing programs like these since everyone is for helping the culturally deprived, even those who oppose school integration. These kinds of programs will generally receive public support since they permit a kind of tokenism which relieves the consciences of people who are truly bigoted and prejudiced.

7. The hiring of qualified teachers of minority races is definitely looked upon as a worthwhile recommendation by a large majority of the community. Approximately 90 percent of the informants favored this recommendation. Since the hiring of minority race teachers does not contain a strong element of personal threat and is somewhat removed from the concerns of the general citizen of the community, opposition should be minimal within most population groups.

8. Since the establishment of day-care centers and nursery schools also does not offer any immediate personal threats, they too are acceptable to most adults. Approximately 90 percent of the informants favored their creation and operation.

9. Even though 85 percent of the informants favored the integration of day-care centers and nursery schools, superintendents and school boards should expect some opposition from some citizens in the community. In this survey it was found that a certain subset of the total sample objected to the integration of the elementary schools, the junior high schools, and the day-care centers and nursery schools. Since these individuals tended to be advanced in age, they would not be expected to have many children to send to the day-care centers and nursery schools. Their opposition must have been related to a prejudiced point of view.

10. An extended summer school program was approved by approximately 95 percent of the informants.

II. General Conclusions

1. School boundary changes to achieve racial balances in the schools are acceptable to a majority of adults. However, supeintendents and school boards should expect significant amounts of opposition to come from the established white members of the community. These people usually will have been residing in the community for a long time, and they will usually be regular voters and property taxpayers. Many of them will behave as though the schools were their own personal property, especially if they had their own education in them. To think of changing school boundaries to achieve integration will be abhored and unheard of by them; after all, schools were built to teach children, not to conduct social experiments in integration. Frequently they will argue for the continued operation of neighborhood schools, and they will defend the point of view that students should go to the school close to their own home. The reasons they will offer for their position will generally be increased safety for students and the impracticality and high costs of bussing children to schools far from home. Many will argue that Negroes should go to the schools in their own neighborhoods. They will fail to understand that separate education means unequal education. Many will use the same arguments to fight against the integration of the junior high schools, even though most of the arguments will not be applicable. Finally, they will be against the integration of day-care centers and nursery schools. Their opposition to elementary school inte-

gration, junior high school integration, and day-care center and nursery school integration can only mean that these people are not interested in better education for all children, but are only interested in protecting their prejudiced and bigoted points of view. School boards will have to find ways to meet their criticisms. It is difficult to believe that evidence from contemporary research will help. People with finely structured racial prejudices will not believe research evidence. For them emotional appeals might be the only solution.

2. Programs to reach the culturally deprived are acceptable to the community at large. There is universal agreement to the establishment and operation of these kinds of programs. It would seem that if a superintendent or school board were to consider instituting these kinds of programs, they would find very little opposition coming from the public. However, difficulty might be encountered in finding funds to support these programs. In the survey, the public was asked if they would support programs to reach the culturally deprived. To this they gave definite support. However, they were not asked if they would provide financial support of programs to reach the culturally deprived. To this, they might have given less support.

3. Ability grouping is not to be tampered with. The public believes that ability grouping is a good thing. If a school board or superintendent anticipates reducing the number of ability groupings, it should first conduct a campaign to reeducate the public concerning their utility. With a little

library research, school officials should have little difficulty in finding evidence that should convince a large part of the population that ability grouping is not without its disadvantages. However, school officials should not be surprised if the public does not believe them.

APPENDIX A

RESPONSE RATES TO MAIL SURVEYS AND THEIR CONNECTION TO THE TYPE OF APPEAL MADE IN THE INTRODUCTORY LETTER SENT WITH THE QUESTIONNAIRE

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INTRODUCTION

Research surveys employing mailed questionnaires are one of the most popular research methods used by social scientists because of their minimal cost and simplicity of execution. Unfortunately, conclusions drawn from mail surveys are frequently doubted or disbelieved because of the high proportions of nonrespondents that usually accompany these kinds of surveys. Because of this, survey techniques designed to induce high response rates are held in high esteem and value by survey scientists provided, of course, that they do succeed in increasing response rates.

Since a method possessing significant utility for increasing response rates in one investigation may fail to increase response rates in other surveys, it would seem that much is still to be learned in how a mail survey could best be conducted to bring about the maximum response rate possible. At present, this determination appears to be a near impossibility because of the great variety of surveys possible and because survey research has not developed to the point where a unified theory exists pertaining to nonresponse. For these reasons proposed new methods and modifications of successful old methods designed to increase rates can only be tested through empirical studies performed in conjunction with surveys involving mailed questionnaires. Admittedly, not all surveys permit the testing of a proposed method, especially if the method should have a harmful interaction with the basic purposes of the survey.

In the survey conducted in Berkeley, California, on de facto segregation in the community's public schools, two methods, assumed to be free of deleterious

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effects with respect to the basic purposes of the survey were tested to determine whether or not they could be used in future surveys to increase response rates. This is a report on the success encountered with these methods.

As would be expected, most of the evidence concerning techniques to increase response rates has been gained from similar empirical investigations. From these investigations, it is generally believed that response rates can be increased by supplying the potential respondent with a stamped-addressed return envelope, by including with the questionnaire a well-written introductory or cover letter printed on a good quality bond paper with a well-known or recognizable letterhead, by employment of simple language structure and vocabulary in a short questionnaire, and by mailing to all nonrespondents a follow-up letter with extra questionnaires and extra stamped-addressed return envelopes.

For the survey to be discussed, each of these techniques was employed in an attempt to induce high response rates. In addition, an experiment was conducted focused on determining whether cooperation could be affected by the type of appeal or pitch made in the introductory cover letter. A second experiment was conducted which centered on determining whether a short follow-up letter sent to the nonrespondents was better than a long one in increasing the response rates. In this investigation, one-half of the sample was sent an introductory letter which contained a paragraph that suggested returning the completed questionnaire was like partially fulfilling one's civic responsbility and was therefore a sign of good citizenship. The appeal included in the second letter sent to the remaining half of the sample depended upon the suggestion that returning the completed questionnaire was like helping science and that the supplied answers could be considered as a contribution to science and scientific knowledge. The results and implications for future surveys derived from these planned experiments are summarized in this section.

EXPERIMENTAL DESIGN

The experimental design used to compare the science and citizenship introductory letters and the long and short follow-up letters is a very simple one to employ.

Berkeley has 28 census tracts. By a random process the 28 census tracts of the community were partitioned into two sets. Introductory letters mailed to one set contained the appeal centering on contribution to science and scientific knowledge. The letter sent to the remaining census tracts attempted to induce a personal involvement with the survey on the basis of civic duty and good citizenship. In both cases the introductory letter gave a brief explanation of the purposes of the survey and cooperation was requested. Copies of these letters are reproduced on pages 14 and 15.

For the follow-up letters each set of 14 census tracts was further divided by a random process. Seven of the census tracts in each set were sent a short follow-up letter. The recipients were reminded of the survey and were asked to cooperate by returning their completed questionnaires. The remaining census tracts received a similar but more detailed letter, whose length was twice that of the shorter follow-up letter. In both cases extra questionnaires and stamped-addressed return envelopes were supplied. Copies of these letters are reproduced on pages 16 and 17.

METHOD OF ANALYSIS AND RESULTS

The method of analysis used in this report entails correlating the observed response rates with 1960 census tract information.

Since the variables studied are associated with either binomial or multinomial populations, nonparametric methods are used throughout the analysis. Since the consequences arising from the rejection of true hypotheses are not unduly harmful, all statistical tests are made with a probability of a type one error equal to .05. However, for those who prefer to use other significance levels, probabilities are reported for all rejected hypotheses. In any case, $p = .05$ is used for all confidence intervals analyzed by means of a nonparametric analog of the multiple linear contrast method of Scheffe used in conjunction with the analysis of variance. This method is described in detail in Appendix B.

The terms "Low, Medium Low, Medium High, and High" as used in this paper refer to the levels of these variables for Berkeley, California. They might not mean the same thing for other communities. That they don't is easy to demonstrate. For example, of the 224 census tracts of the county in which Berkeley is located, 41 reported median years of education exceeding 12.5 years. Of these 41 tracts, 18 are in Berkeley.

The variability in response rates by individual census tracts was extremely large. The minimal response rate was 8.7%; the maximal response rate was 75.0%. The response rate for all census tracts was 35.8%. For the science letter the response rate was 36.8%, and for the citizenship letter it was 34.7%. As shown in Table 1, this does not represent a statistically significant difference.

Analyses are summarized in Tables 1 and 2 for the following five demographic variables: percent white, median years education, median family income, percent homeowners, and median adult age. Each of these independent variables shows a statistically significant main effect with response rates. The main effects corresponding to percent white, median years of education, and median family income are very much alike. As these independent variables increase, the response rates increase. The main effects for homeownership and median age also parallel one another but in an unexpected way. For the case of homeownership the response rates are greatest for those tracts having either a small or a large proportion of homeowners. When age is treated as the independent variable, the response rates are high for census tracts with either a large proportion of young people or a large proportion of old people.

According to the non-parametric test for interaction, median years of education, median family income, and percent homeowners each shows an interaction with the type of introductory letter. According to the non-parametric post hoc analysis method described in Appendix B, the significant sources of the interactions are found among the upper levels of these variables. Among the tracts with the highest median family income, the response rate is highest for the tracts that were sent the science letter, while for the tracts classified as being medium high, the citizenship letter induced the greatest response. In this case, both interaction

Table 1. Chi-Square Analysis of the Response Rates to the Science and Citizenship Introductory Letters According to Demographic Characteristics of the Census Tracts as Reported in the 1960 Census

Sources of Variation	Degrees of Freedom	Chi-Square Value	p-value
Type of Letter (Science vs. Citizenship)	1	.62	$p > .05$
Percent White	3	77.06	$p < .001$
Percent White x Type of Letter	3	6.88	
Median Years Education	3	67.86	$p < .001$
Education x Type of Letter	3	13.04	$p < .01$
Median Family Income	3	50.11	$p < .001$
Income x Type of Letter	3	23.52	$p < .001$
Percent Homeowners	3	15.55	$p < .005$
Homeownership x Type of Letter	3	29.36	$p < .001$
Median Adult Age	3	11.28	$p < .025$
Age x Type of Letter	3	1.02	$p > .05$

Table 2. Response Rates to the Introductory Letters by 4 Levels of the Demographic Characteristics Under Test

Source of Variation	Level of the Demographic Characteristics			
	Low	Medium Low	Medium High	High
Percent White Level	22.9%	72.0%	92.5%	97.5%
Total Response Rate	18.6	31.8	45.9	47.2
Science Response Rate	20.9	31.6	43.6	52.6
Citizenship Response Rate	17.0	32.5	46.7	35.9
Educational Level	10.7 years	12.5 years	14.8 years	16.6
Total Response Rate	18.8	34.3	46.0	44.2
Science Response Rate	22.4	36.8	38.6	51.0
Citizenship Response Rate	13.5	29.7	49.0	34.1
Median Family Income Level	$5000	$6140	$6730	$10930
Total Response Rate	26.3	27.5	41.5	48.4
Science Response Rate	29.1	25.2	33.5	53.8
Citizenship Response Rate	24.1	29.2	52.8	35.9
Homeownership Level	13.6%	38.9%	50.8%	83.7%
Total Response Rate	40.4	32.3	30.3	42.3
Science Response Rate	40.1	21.6	30.9	56.5
Citizenship Response Rate	40.7	35.8	23.5	26.3
Median Age Level	35.9 years	42.6 years	44.7 yrs.	50.7
Total Response Rate	37.3	32.9	31.7	43.0
Science Response Rate	40.2	32.6	32.9	46.1
Citizenship Response Rate	35.5	33.3	29.6	39.9

effects are statistically significant. The interaction effect with percent homeowners parallels that found for median years of education in that it exists only for the upper level. Like median years of education, the science letter comes out ahead.

Similar analyses have been made for the follow-up letters. These are summarized in Tables 3 and 4. In this case, the difference between the response rates for the short and long letters is statistically significant. The response rate for the long letter was 27.7% and for the short letter 21.6%. As with the introductory letters, all main effects were statistically significant, but none of the interactions were significant. For the main effects, the response rate patterns repeated those found for the introductory letters except that they tended to be at a lower level.

According to the nonparametric method of multiple comparisons, the response rates for the census tracts in the high levels of median years education and median family income differed significantly from those of the lower three levels, while the differences among the response rates at the lower levels were not statistically significant. The response rates for percent homeowners also repeated those found for the introductory letters. Again, the highest rates were found at the extremes. The variation in response rate according to percent white also mimicked that found for the introductory letters in that the response rates increased monotonically with the increases in the percent white. Finally, the trends noted for median age were repeated. As before, the highest response rates were found at the extremes.

Table 3. Chi-Square Analysis of the Response Rates to the Short and Long Follow-Up Letters According to Demographic Characteristics of the Census Tracts as Reported in the 1960 Census

Sources of Variation	Degrees of Freedom	Chi-Square Value	P-value
Type of Letter (Short vs. Long)	1	4.37	$p<.05$
Percent White	3	40.75	$p<.001$
Percent White x Type of Letter	3	1.40	$p>.05$
Median Years Education	3	34.68	$p<.001$
Education x Type of Letter	3	3.72	$p.>05$
Median Family Income	3	34.74	$p<.001$
Income x Type of Letter	3	1.48	$p.>05$
Percent Homeowners	3	12.63	$p<.01$
Homeownership x Type of Letter	3	6.76	$p.>05$
Median Adult Age	3	13.61	$p<.005$
Age x Type of Letter	3	6.25	$p.>05$

Table 4. Response Rates to the Follow-Up Letters by 4 Levels of the Demographic Characteristics Under Test

Source of Variation	Level of the Demographic Characteristics			
	Low	Medium Low	Medium High	High
Percent White Level	22.9%	72.0%	92.5%	97.5%
Response Rate	17.6	19.8	26.8	44.0
Long Response Rate	22.5	23.7	27.2	49.2
Short Response Rate	13.4	15.4	25.5	40.7
Educational Level	10.7 years	12.5 years	14.8 years	16.6
Response Rate	18.2	20.2	25.8	41.3
Long Response Rate	23.8	20.8	23.8	44.2
Short Response Rate	15.6	19.4	30.0	35.6
Median Family Income Level	$5000	$6140	$6730	$10930
Response Rate	20.7	18.5	24.6	42.7
Long Response Rate	25.2	19.2	28.5	46.3
Short Response Rate	15.0	17.6	20.0	39.0
Homeownership Level	13.6%	38.9%	50.8%	83.7%
Response Rate	28.2	19.2	22.3	33.3
Long Response Rate	26.4	22.7	28.8	44.9
Short Response Rate	33.3	12.9	16.8	28.6
Median Age Level	35.9 years	42.6 years	44.7 years	50.7
Response Rate	25.6	22.1	20.2	35.1
Long Response Rate	26.4	29.2	24.8	32.0
Short Response Rate	23.6	16.9	15.9	37.0

DISCUSSION

Even though there are significant interactions between the types of appeals made in the cover letters and the four levels of some of the demographic variables investigated in this report, it would seem that the true sources of these interactions are to be found in the social class composition of the survey community.

It is reasonable to assume that census tracts characterized by high education levels, high median family incomes and high percentages of homeowners represent areas populated by families with upper class values and attitudes. At the other extreme, census tracts with low levels of these variables should represent areas predominately populated by individuals with lower-class values and attitudes. In a community characterized by broad socio-economic classes, one would expect the intercorrelations between these variables to be high.

In Berkeley the percent white correlates highly with median years education and median family income suggesting that this variable is part of, or reflects, the social class divisions of the community. This might be the most important variable relating to the large differences in response rates. However, it does not follow that the response rates are low for the non-white community of Berkeley because of the racial variable; they are low in Berkeley because racial variables generally follow socio-economic class divisions as a whole. Whites in the lower socio-economic census tracts also had low response rates and according to the 1960 census their median years of education and median family incomes were approximately equal to those of the nonwhites in the same tracts. Thus, it does not seem incorrect to conclude that response is dictated more by socio-economic class than it is by specific demographic characteristics. As a result, the source of the significant interactions will be explained on this broad basis.

Essentially the division of the census tracts into quarters for the non-parametric interaction test followed socio-economic class lines. Census tracts characterized as high on one variable were also high on the others. For example, of the seven tracts with the highest median family incomes, five had the highest median years of education, six had the highest percentage of homeowners, and six had the highest percentage of whites. For the low level census tracts, the same basic pattern is noted.

Since the significant main effects associated with increase in social class have been known for some time by survey analysts, a discussion of this finding is not necessary. The reasons behind the significant interactions with the different types of letters by the various socio-economic classes in this survey can only be surmised. Some of the conclusions made here are, clearly, working hypotheses. Some of them call for further research.

Census tracts representing the highest socio-economic level responded in greatest numbers to the science letters. In this group, approximately 50% responded to the scientific appeal and approximately 35% responded to the citizenship appeal. In the census tracts reflecting medium high socio-economic levels, the response rates reversed. The census tracts representing lower socio-economic levels had a low overall response rate of about 25% for each type of letter.

The residents in the highest socio-economic tracts are somewhat new to the community. Among the respondents from these areas only 53% had lived in Berkeley for 10 years or more, and only 13% had been schooled in Berkeley. Many of these people are in Berkeley because of the University. A large number of heads of families in these tracts are highly educated professional people from the University and other organizations requiring high educational training. Many of them make their living as research scientists. Adults in these professions would be expected to react favorably to an appeal to science.

The residents in the medium high socio-economic tracts are, for the most part, graduate students of the University, long-time residents of Berkeley, or people in the upper age groups who have retired in Berkeley. Unfortunately, the random assignment of the letters to the census tracts makes a clear interpretation of this difference somewhat tenuous since the final assignment of letters resulted in a confounding of the types of letter with the age level of the people in the separate census tracts. This means that rate differences could represent age differences, or they could represent letter appeal differences. On the average, the science letter went to the tracts populated by students. The citizenship letter went to tracts populated with older residents.

Berkeley, like most large communities in America, has undergone major socio-demographic changes since the end of World War II. Older citizens and residents of the community have witnessed a large influx of Negroes into areas that were once populated by lower middle class whites. As the Negroes have extended the boundaries of their neighborhoods, it would seem that the white residents of the community would experience the same anxieties and resistance to change as found in other American cities, in spite of Berkeley's association with the liberal University. Feeling threatened by changes in the ethnic makeup of their residential areas and by the changes in school boundaries aimed at complete integration of their schools, these citizens might have been eager enough to respond to any appeal.

However, external evidence suggests that the citizenship appeal would receive a better reception than the science appeal. These tracts have voted against fair housing laws and school bonds in recent elections. Most of the letters to the editor of the local newspaper come from these tracts. These letters tend to be critical of the recent actions of the school board and somewhat conservative on most issues. This suggests that people in these tracts would react favorably to the citizenship appeal. Speculating a bit further, it would seem that many of these people associate the increasingly complex demands upon contemporary life with science and as a result would look with disfavor at an appeal based upon the impersonal use of IBM cards or the latest scientific machines.

Despite the care taken to keep the language of the appeal letters roughly within the understanding and grasp of an adult reading at the sixth grade level in the hope of attracting a large response from the low socio-economic groups who have experienced educational deprivation, the response rate from these groups was disappointing for both types of letters. In a discussion with the interviewer who covered the Negro portion of the community, it was learned that most of the non-respondents contacted had not read the letter. Some said they had, but did not understand it.

Some thought it was junk mail and threw it out. This suggests that a test of the science and citizenship letters was never accomplished in these census tracts and that future attempts to reach this segment of the population through a mail survey might not be very successful. On the positive side, it is perhaps worth reporting that most of the nonrespondents were very eager to answer the questions after they were given a clear explanation of the purposes of the survey.

Finally, length of follow-up letter is of some significance in affecting response rates. In this survey, the follow-up letters were quite distinct in that the short letter served only to remind the nonrespondent to answer the original letter, while the long letter restated the purposes of the survey and that the answers to the questionnaires were still as important as ever. Also, the experience gained through the interviewing of the low socio-economic groups suggests that as much explanatory information as possible be provided in the follow-up letter, but in such a way so as not to affect the results of the survey. Clearly, more than a reminder is called for.

SUMMARY AND IMPLICATIONS FOR FUTURE SURVEYS

An analysis of the response rates by census tracts for the survey on de facto segregation in Berkeley, California indicates that differential appeals made in letters accompanying mailed questionnaires do not generally induce a differential in response rates if the appeals to cooperate are based on either, "Contributing information to science," or, upon, "Fulfilling one's civic duties." However, within subdivisions of the population, different appeals do make a difference. Reasons for this interaction appear to be found in the socio-economic structure of the community. Among census tracts representing high socio-economic class areas, a greater percentage of the original sample responded to the science appeal than to a citizenship appeal, while among census tracts characterized as being medium high in socio-economic status, an appeal to citizenship induced the greatest response. Among lower class areas the response to both letters was essentially the same. Finally, among the non-respondents a long letter reiterating the purposes of the survey induced a greater response than did one in which the follow-up served only as a reminder.

These conclusions suggest that differential appeals be used to induce high response rates in different subdivisions of the population provided, of course, that the appeals do not interfere with the outcomes of the survey. For a community such as Berkeley, it might be useful to write the introductory letters for an educated upper class population and to present as much information as possible in the letter. However, long letters should not be a disadvantage among educated people who would be more apt to read any letter independent of its length. Since the lower class subdivisions of the population are almost certain to show a poor response to any appeal, it might be wise to budget extra money for interviewers and to worry less about the mail approach. As experienced in this survey, the interviewing was very successful; and cooperation was obtained from most of the non-respondents. Finally, it must be recalled that this survey was conducted in an emotionally charged social atmosphere and that the response rates might have been affected by this. More information by other researchers working under similar conditions should be reported. It would be most interesting to learn whether or not related investigations would bear out the findings of this survey.

CITIZENSHIP APPEAL

Dear Citizen of Berkeley:

In the fall of 1962, the Berkeley Board of Education asked 36 citizens to study segregation in the Berkeley schools. They were asked to see how it affected the education of Berkeley's children. Their findings were printed in the report De Facto Segregation in the Berkeley Public Schools. They reported that present school boundaries and regulations lead to segregation in the schools and less effective education for all Berkeley children. They offered some suggestions to correct these problems.

This questionnaire has been sent to you to find out what Berkeley's citizens think about these suggestions. You may not be affected by these suggestions, but certainly you want all Berkeley children to have the best possible education.

You have been chosen as a member of a representative group of citizens to show your feelings on these suggestions. In free countries, all citizens are called upon to express their views on vital questions. Knowledge of your views is important to Berkeley and its children.

It is impossible to talk to each Berkeley adult, so a sample must be taken. You might believe that one person's answers can't possibly make much difference. Please believe that they do. Your answers are very important. You might be answering for many citizens like yourself. These answers would remain unknown except for you.

Your answers are needed, and so are those of the other adults who live in your home. Each adult should complete a separate questionnaire. When finished, the questionnaire should be sealed and returned. No postage is needed. All answers will be kept secret. You do not need to sign the questionnaire unless you want to.

Thank you for your help and cooperation.

Committee Studying the Report:
De Facto Segregation in the
Berkeley Public Schools

SCIENTIFIC APPEAL

Dear Citizen of Berkeley:

In the fall of 1962, the Berkeley Board of Education asked 36 citizens to study segregation in the Berkeley schools. They were asked to see how it affected the education of Berkeley's children. Their findings were printed in the report De Facto Segregation in the Berkeley Public Schools. They reported that present school boundaries and regulations lead to segregation in the schools and less effective education for all Berkeley children. They offered some suggestions to correct these problems.

This questionnaire has been sent to you to help to find out what Berkeley's citizens think about these suggestions. You may not be affected by these suggestions but certainly you want to furnish the most accurate information possible.

You have been selected by a carefully controlled statistical method to supply some of this information. Your answers will be counted with those of others and analyzed on the latest scientific equipment. By answering the questions you can provide us the valuable information needed to carry out a scientific study of these serious educational problems.

It is impossible to talk to each Berkeley adult, so a sample must be taken. You might believe that one person's answers can't possibly make much difference. Please believe that they do. Your answers are very important. You might be answering for many citizens like yourself. These answers would remain unknown except for you.

Your answers are needed, and so are those of the other adults who live in your home. Each adult should complete a separate questionnaire. When finished, the questionnaire should be sealed and returned. No postage is needed. All answers will be kept secret. You do not need to sign the questionnaire unless you want to.

Thank you for your help and cooperation.

Committee Studying the Report:
De Facto Segregation in the
Berkeley Public Schools

LONG FOLLOW-UP LETTER

Dear Citizens of Berkeley:

A few days ago you and the other adults in your home were asked to complete a questionnaire about the report: De Facto Segregation in the Berkeley Public Schools. Many citizens have complete their questionnaires and returned them. If you were one of them, thank you very much.

If you misplaced your questionnaire or did not have a chance to complete it, please reply on the enclosed questionnaire which is exactly like the first one you received. Answers from each of you are very important since only a small scientifically chosen group of Berkeley's citizens are included in the survey. This means that each of you is really answering for many adults in Berkeley who share views just like yours.

Won't you take just five minutes to answer now? When you are finished, place the questionnaire in the envelope provided and mail it. No postage is needed. All answers will be kept a secret.

If you would like to talk to someone about this questionnaire, just write your telephone number and address on a sheet of paper and mail it, in the envelope provided. A representative of the committee will call you at your home.

Thank you for your help and cooperation.

Committee Studying the Report:
De Facto Segregation in the
Berkeley Public Schools.

SHORT FOLLOW-UP LETTER

Dear Citizens of Berkeley:

A few days ago you and the other adults in your home were asked to complete a questionnaire about the report: De Facto Segregation in the Berkeley Public Schools. Answers from each of you are very important since only a small scientifically chosen group of Berkeley's citizens are included in the survey. If you have already replied, thank you very much. If you haven't, won't you please take five minutes to complete the enclosed questionnaire which is exactly like the first one?

If you would like to talk to someone about this questionnaire, just write your telephone number and address on a sheet of paper and mail it in the envelope provided. A representative of the committee will call you at your home.

Thank you for your help and cooperation.

Committee Studying the Report:
De Facto Segregation in the
Berkeley Public Schools.

Appendix B

Large Sample Multiple Comparisons

Leonard A. Marascuilo
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Abstract

Large sample multiple comparisons based upon a X^2 analog of Scheffé's Theorem are illustrated by means of five examples. The examples involve the correlation coefficients of K independent bivariate normal populations; the interaction measures of K independent contingency tables; the parameters of K independent normal populations with unequal variances; and the differences between the parameters of K sets of paired normal populations with unequal variances. In addition, a general test statistic is presented that may be used to test the null hypothesis that involves the parameters.

Large Sample Multiple Comparisons[1]

Leonard A. Marascuilo

University of California, Berkeley

Introduction

Most behavioral scientists no longer find a simple rejection of the null hypothesis sufficient. Most prefer to follow a decision to reject a tested hypothesis with a post hoc analysis of certain linear contrasts of the parameters to determine the sources of variation that are most likely responsible for the rejection of the hypothesis.

If the decision to reject the null hypothesis is based upon an F-ratio used in a Model I Analysis of Variance design, a possible explanation for the rejection can always be found by using any number of multiple confidence interval comparisons methods, the most popular being those of Scheffé or Tukey. Similar methods for non-parametric analysis of variance designs based on ranks have been obtained by Dunn and Steel. Goodman and Berger and Gold have derived similar techniques for binomial and multinomial models. It is not generally known that these methods can be easily extended to include contrasts involving correlation coefficients, interaction measures of contingency tables, and many other standard statistical measures. All of these methods follow directly from a theorem analogous to Scheffé's theorem, but based upon the Chi-square distribution instead of the F-distribution.

This general theorem is stated in this paper. It is then used in a number of examples taken from psychological and educational research. While the familiar multiple contrasts methods are valid for all sample sizes provided that the assumptions are satisfied, the methods to be presented here are all based upon asymptotic distribution theory and are therefore large sample methods. As would be expected, these methods reduce to the familiar small sample methods whenever the small sample assumptions are satisfied. While evidence is not presented it is believed that the procedures may be used even if the small sample assumptions are not satisfied; however, Monte Carlo sampling investigations of this statement are needed.

To aid the reader let us recall that a linear contrast of a statistical model is a function Ψ of the following form

$$\Psi = a_1\theta_1 + a_2\theta_2 + \dots + a_K\theta_K$$

where $a_1 + a_2 + \dots a_K = 0$ and $\theta_1, \theta_2, \dots, \theta_K$ are the parameters of the model. Let $\hat{\theta}_1, \hat{\theta}_2, \dots, \hat{\theta}_K$ be unbiased, independent and asymptotically normally distributed estimates of the unknown parameters under the hypothesis that they may be different. Then

$$\hat{\Psi} = a_1\hat{\theta}_1 + a_2\hat{\theta}_2 + \dots + a_K\hat{\theta}_K$$

is an unbiased estimate of the corresponding contrast. Let var $(\hat{\theta}_k)$ be the large sample estimate of the Var $(\hat{\theta}_k)$ and let var $(\hat{\Psi})$ be the large sample estimate of the Var $(\hat{\Psi})$. Then the X^2 analog of Scheffé's Theorem may be stated as follows.

Theorem: In the limit the probability is $(1 - \alpha)$ that simultaneously for all linear contrasts of the form

$$\Psi - \sqrt{X^2_{K-1}\,(1-\alpha)}\;\sqrt{\text{var}\,(\hat{\Psi})} < \Psi < \hat{\Psi} + \sqrt{X^2_{K-1}\,(1-\alpha)}\;\sqrt{\text{var}\,(\hat{\Psi})}$$

It should be noted that this probability statement is a true statement independent of the truth of the null hypothesis. However, the theorem is most useful for the case in which a rejection of the null hypothesis has been made. This statement will be clarified.

Let $\hat{\theta}_o$ be an estimate of the unknown common value of the parameters under the hypothesis that they are identical. Let $\hat{W}_k = 1/\text{var}\,(\hat{\theta}_k)$ be estimates of $W_k = 1/\text{Var}\,(\hat{\theta}_k)$. Then an easy to compute statistic that may be used to test the hypothesis of equal parameter values is given by

$$U_o' = \sum_{k=1}^{K} \frac{(\hat{\theta}_k - \hat{\theta}_o)^2}{\text{var}\,(\hat{\theta}_k)} = \sum_{k=1}^{K} \hat{W}_k\,(\hat{\theta}_k - \hat{\theta}_o)^2$$

Following the examples illustrating the use of the X^2 analog of the Scheffé Theorem, a heuristic argument is presented showing that U_0' has a X^2 distribution with (K-1) degrees of freedom. Furthermore, the validity of U_0' as a test statistic for the null hypothesis is presented.

As was suggested by one of the referees, the X^2 analog of the Scheffé Theorem could be stated in terms of the statistic as follows. If $U_0' > X^2_{k-1}(1-\alpha)$, then either the null hypothesis is true and an event of probability α has occurred or there is at least one linear contrast of the parameters which is different from zero. Thus if $U_0' < X^2_{k-1}(1-\alpha)$ and the decision is made not to reject the hypothesis, then all confidence intervals computed on a post hoc basis will be certain to include the value of zero. On the other hand, if $U_0' > X^2_{k-1}(1-\alpha)$ and the decision is made to reject the hypothesis, then there exists at least one confidence interval that will not include zero.

Example One

Multiple Comparisons Among the Correlation Coefficients of K Independent Bivariate Normal Populations

This example with K = 5 involves the measurement of the correlations between two standardized tests given to fifth-grade children in five urban elementary schools in the Oakland, California Unified School District. The two tests are the Kuhlmann-Anderson Intelligence Test and the Paragraph Meaning section of the Stanford Achievement Test. The sample sizes and the correlation coefficients for the five schools are shown in Table One. As can be seen, the range in correlation coefficients is sizeable. Since these particular schools were located in neighborhoods spreading over broad socio-economic strata, one would not expect the correlations to be necessarily uniform. Using the techniques presented here, a test of this assumption is made. In particular, the hypothesis

$$H_0\ \rho_1 = \rho_2 = \rho_3 = \rho_4 = \rho_5 = \rho_0$$

is tested against the alternative hypothesis that H_o is false.

Normal curve theory is introduced through the familiar Fisher transformation. For this let $\hat{\Theta}_k = Z_k = 1/2 \log_e \frac{1 + r_k}{1 - r_k}$.

For large N_k it is known that

$$\Theta_k = E(\hat{\Theta}_k) = E(Z_k) \cong 1/2 \log_e \frac{1 + \rho_k}{1 - \rho_k}$$

$$\text{Var}(\hat{\Theta}_k) = \text{Var}(Z_k) \cong \frac{1}{N_k - 3}$$

With this transformation,

$$U_o' = \sum_{k=1}^{5} \frac{(Z_k - Z_o)^2}{\text{var}(Z_k)} = \sum_{k=1}^{5} W_k (Z_k - Z_o)^2 = \sum_{k=1}^{5} (N_k - 3)(Z_k - Z_o)^2$$

with

$$Z_o = \sum_{k=1}^{5} W_k Z_k \bigg/ \sum_{k=1}^{5} W_k$$

Note that the W_k do not have to be estimated for this example. Computations for the test are summarized in Table 1.

For this example

$$Z_o = \frac{55(.793) + 65(.867) + 110(.829) + 34(1.589) + 88(.472)}{55 + 65 + 110 + 34 + 88} = .814$$

and

$$U_o' = 55(.793 - .814)^2 + 65(.867 - .814)^2 + 110(.829 - .814)^2 + 34(1.589 - .814)^2 + 88(.472 - .814)^2 = 30.94$$

Since 5 correlation coefficients are being compared, U_o' is asymptotically Chi-square with 4 degrees of freedom if H_o is true. For $\alpha = .05$, Chi-square equals 9.49 and as a result, H_o is rejected. Therefore, it is known that at least two of

Table One

Computations for Example One

School	1	2	3	4	5
r_k	.66	.70	.68	.92	.44
N_k	58	68	113	37	91
Z_k	.793	.867	.829	1.589	.472
$\mathrm{var}(Z_k)$	.0182	.0154	.0091	.0294	.0114
W_k	55	65	110	34	88

the correlations are different or that some contrast of them is significantly different from zero. For this example, the most interesting contrasts are the simple differences between the correlations. The general form of the $(1-\alpha)\%$ simultaneous confidence intervals about the contrasts is given by

$$(Z_{K_1} - Z_{K_2}) \pm \sqrt{\chi^2_{K-1}(1-\alpha)}\ \sqrt{\frac{1}{N_{K_1}-3} + \frac{1}{N_{K_2}-3}}$$

For this example, $\sqrt{\chi^2_{K-1}(1-\alpha)} = \sqrt{\chi^2_4\ (.95)} = \sqrt{9.49} = 3.08$. Of the ten simple contrasts, the four that involve school number four are statistically significant. The simple contrasts are as follows.

$-.64 < Z_1 - Z_2 < .49$	Not Significant
$-.54 < Z_1 - Z_3 < .47$	Not Significant
$-1.47 < Z_1 - Z_4 < -.12$	Significant
$-.21 < Z_1 - Z_5 < .85$	Not Significant
$-.44 < Z_2 - Z_3 < .52$	Not Significant
$-1.37 < Z_2 - Z_4 < -.07$	Significant
$-.11 < Z_2 - Z_5 < .90$	Not Significant
$-1.36 < Z_3 - Z_4 < -.16$	Significant
$-.08 < Z_3 - Z_5 < .80$	Not Significant
$.50 < Z_4 - Z_5 < 1.74$	Significant

Post hoc inspection of the correlation coefficients suggests that the correlation for schools 1, 2, and 3, are equal and as a group might differ from the correlation for school 5. This post hoc hypothesis can be tested as follows.

A contrast associated with this hypothesis is

$$\hat{\psi} = 1/3\ (Z_1 + Z_2 + Z_3) - Z_5 = 1/3\ (.793 + .867 + .829) - .472 = .358$$

An estimate of Var $(\hat{\psi})$ is given by

$$\begin{aligned} \text{var}\ (\hat{\psi}) &= 1/9\ \text{var}\ (Z_1) + 1/9\ \text{var}\ (Z_2) + 1/9\ \text{var}\ (Z_3) + \text{var}\ (Z_5) \\ &= 1/9\ (.0182) + 1/9\ (.0154) + 1/9\ (.0091) + .0114 = .0161 \end{aligned}$$

The 95% confidence interval for ψ is

$$\hat{\psi} - \sqrt{\chi_4^2\,(.95)}\ \sqrt{\mathrm{var}\,(\hat{\psi})} < \psi < \hat{\psi} + \sqrt{\chi_4^2\,(.95)}\ \sqrt{\mathrm{var}\,(\psi)}$$

$$.358 - 3.08\ \sqrt{.0161} < \psi < .358 + 3.08\ \sqrt{.0161}$$

$$-.032 < \psi < .748$$

The result is not significant. The post hoc hypothesis concerning these four schools is not supported.

Note that eleven individual confidence intervals have been investigated with an overall probability of a type one error equal to .05. If each confidence interval had been determined with Z = 1.96, the familiar normal curve value, the probability of at least one type one error among the eleven intervals would be less than or equal to .55, a rather high probability of error. When the Chi-square value of 3.08 is used, the intervals will be wide, but more important, the corresponding probability of at least one type one error is less than or equal to .05.

It should be mentioned that the statistic U_0' does not give a new test for the hypothesis of equal correlation coefficients. This test statistic is well known and may be found in many advanced books in statistics. For example, see Hays, page 532, or Rao, page 233. What is new, however, is the multiple contrast method for detecting the sources of the differences between the correlations.

One should note that the Fisher Z transformation is not essential for the proper use of this method. With large samples one could use the sample correlation coefficients because their asymptotic distributions would be normal. However, if the sample sizes are small then the Fisher Z transformation must be used to introduce normality.

Example Two

Multiple Comparisons Among the Parameters of
K Independent Binomial Populations

This example with K = 3 is from a study of responses to a question appearing on a mailed questionnaire sent to a random sample of adults in Berkeley, California. The purpose of the survey was to measure the attitudes of the public concerning some proposed changes designed to improve the racial balance within the public schools of the community. The question was as follows:

> Now Berkeley Schools divide children into classes on the basis of how well they did in earlier classes. This sometimes leads to racial segregation in the classrooms. (It has been) suggested (that) fewer "ability groupings" be used. This would cut down on segregation and would produce classes with children who have a larger range of ability.
>
> I agree____________ I disagree____________ I am not sure____________

A stratified sampling procedure using census tracts as the strata was employed. On the basis of 1960 census tract data, the 28 census tracts of the community were divided into three education groups. The nine census tracts with the lowest reported median years of education were classified as low education tracts; the next ten were classified as medium education tracts; and the nine tracts with the highest median years of education were classified as high education tracts. Responses to the question classified on the education variable are summarized in Table Two. The hypothesis tested is that the proportion of adults who agree with the question is unrelated to the education level of the tracts in the community. The statistical hypothesis is

$$H_o: p_1 = p_2 = p_3 = p_o$$

with the alternative hypothesis being that H_o is false.

Normal curve theory is introduced through the set of maximum likelihood estimators of the parameters of the K independent binomial populations. For this case

$$\hat{\Theta}_k = \hat{p}_k = \frac{\text{number who agree in level k}}{\text{number of respondents in level k}}$$

As shown in most elementary statistics textbooks

$$\Theta_k = E(\hat{\Theta}_k) = E(\hat{p}_k) = p_k$$

$$\text{Var}(\hat{\Theta}_k) = \text{Var}(\hat{p}_k) = \frac{p_k q_k}{N_k}$$

With this transformation and the estimated variances

$$U_o' = \sum_{k=1}^{3} \frac{(\hat{p}_k - \hat{p}_o)^2}{\text{var}\,(\hat{p}_k)} = \sum_{k=1}^{3} \hat{W}_k\,(\hat{p}_k - \hat{p}_o)^2$$

with

$$\hat{p}_o = \sum_{k=1}^{3} \hat{W}_k\,\hat{p}_k \Bigg/ \sum_{k=1}^{3} \hat{W}_k$$

Computations for the test are summarized in Table Two.

For this example

$$\hat{p}_o = \frac{322.5806\ (.3816) + 1136.3636\ (.2807) + 1075.2688\ (.1964)}{322.5806 + 1136.3636 + 1075.2688} = .2578$$

and

$$U_o' = 322.5806\ (.3816 - .2578)^2 + 1136.3636\ (.2807 - .2578)^2 + 1075.2688\ (.1964 - .2578)^2 = 9.58$$

Since three binomial populations are being compared, U_o' is asymptotically Chi-square with two degrees of freedom if H_o is true. For $\alpha = .05$, Chi-square equals 5.99. As a result, H_o is rejected. Therefore, it is known that at least two of the parameters are statistically different from one another or that at least one linear contrast of the parameters is significantly different from zero. For this example, the most interesting contrasts are the simple differences between the binomial parameters. The general form of the $(1-\alpha)\%$ set of simultaneous confidence intervals about the contrasts is given by

$$(\hat{p}_{k_1} - \hat{p}_{k_2}) \pm \sqrt{\chi^2_{k-1}\,(1-\alpha)}\ \sqrt{\frac{\hat{p}_{k_1}\hat{q}_{k_1}}{N_{k_1}} + \frac{\hat{p}_{k_2}\hat{q}_{k_2}}{N_{k_2}}}$$

For this example $\sqrt{\chi^2_{k-1}\ (1-\alpha)} = \sqrt{\chi^2_2\,(.95)} = \sqrt{5.99} = 2.45$.

Again these intervals will be wider than those obtained for $Z = 1.96$. However, the probability of at least one type one error among the set is less than .05 instead of

Table Two

Computations for Example Two

Education Level	1. Low	2. Medium	3. High
Number Agreeing	29	64	33
Number Disagreeing	47	164	135
N_k	76	228	168
$\hat{p}_k$	.3816	.2807	.1964
var $(\hat{p}_k)$	.00310	.00088	.00093
$\hat{W}_k$	322.5806	1136.3636	1075.2688

.15 as it would be if $Z = 1.96$, were to be used. Of the three simple contrasts one contrast is significant. It indicates that a difference in agreement exists between the census tracts that are either high or low in education. All simple contrasts are listed.

$-.05 < P_1 - P_2 < .26$	Not Significant
$.03 < P_1 - P_3 < .34$	Significant
$-.02 < P_2 - P_3 < .19$	Not Significant

One might ask why U_o' should be proposed as a test statistic for testing the null hypothesis when the familiar Pearson formula $X^2 = \sum \frac{(O - E)^2}{E}$ is available and leads to the same conclusions. ($X^2 = 9.59$, $U_o' = 9.58$) To make matters even more confusing, Goodman has introduced another test statistic which he calls Y^2 for testing the same hypothesis. He has shown that Y^2 is asymptotically equivalent to Pearson's Chi-square. The same is true for U_o'. For this example, $Y^2 = 9.58$ so that the use of this statistic leads to the same decision. The major reason for using Y^2 or U_o' is that they give rise to the multiple contrast method which is of considerable interest. In addition, there is a slight advantage in using U_o' over Y^2 in that it is somewhat easier to calculate. Research assistants who have not had extensive mathematical training will find the computation procedure for U_o' somewhat easier than the corresponding procedure for Y^2. However, it probably makes little difference which of the three statistics is used provided that the sample sizes are large.

Example Three

Multiple Comparisons Among the Interaction Measures Among K Independent Contingency Tables (After Goodman)

This example with $K = 3$ is from the same study as that of Example Two. In this example, responses to the question

> For some grade schools, (it has been) suggested that lines be changed so that the percentage of non-white and white children in these schools would be more like the percentage for the entire school system.
> I agree__________ I disagree__________ I am not sure__________

are classified on a post hoc basis according to reported race and age as given by the respondents. The frequencies are summarized in Table Three. Clearly, the marginal totals (not shown) for each 2 x 2 table are random variables. The number of whites and non-whites is unknown at the time of the mailing, and, certainly, the number agreeing to the question is also an unknown quantity. Thus, the simple Binomial theory is not applicable.

Consider the 2 x 2 contingency table for the lowest age group. A standard measure of interaction or association is given by

$\Delta_1 = \dfrac{p_{11}p_{22}}{p_{12}p_{21}}$ with $(p_{11} + p_{12} + p_{21} + p_{22}) = 1$ where p_{11} and p_{22} are the diagonal probabilities of occurrence and p_{12} and p_{21} are the off diagonal probabilities of occurrence. Another equally valid measure of association is

$$\gamma_1 = \log_e \Delta_1 = \log_e p_{11} + \log_e p_{22} - \log_e p_{12} - \log_e p_{21}.$$

Its similarity to the interaction measures in a 2 x 2 analysis of variance design is obvious. The statistical hypothesis of interest for this example is

$$H_o: \gamma_1 = \gamma_2 = \gamma_3 = \gamma_o$$

with the alternative hypothesis being that H_o is false.

Normal curve theory is achieved through the maximum likelihood estimates of the Δ_k and γ_k. It is easy to show that the maximum likelihood estimate of Δ_k is

$$\hat{\Delta}_k = \frac{\hat{p}_{k11}\,\hat{p}_{k22}}{\hat{p}_{k12}\,\hat{p}_{k21}} = \frac{n_{k11}\,n_{k22}}{n_{k12}\,n_{k21}}$$

and therefore the maximum likelihood estimate of γ_k is

$$\hat{\gamma}_k = \log_e \hat{\Delta}_k = \log_e n_{k11} + \log_e n_{k22} - \log_e n_{k12} - \log_e n_{k21}$$

One can also show that the variances of these estimates are given by

$$\mathrm{Var}\,(\hat{\Delta}_k) = \Delta_k^2 \left[\frac{1}{n_{k11}} + \frac{1}{n_{k22}} + \frac{1}{n_{k12}} + \frac{1}{n_{k21}} \right]$$

and

$$\mathrm{Var}\,(\hat{\gamma}_k) = \frac{1}{n_{k11}} + \frac{1}{n_{k22}} + \frac{1}{n_{k12}} + \frac{1}{n_{k21}}$$

With $\hat{\Theta}_k = \hat{\gamma}_k$ and the estimated variances

$$\hat{\gamma}_o = \sum_{k=1}^{3} \hat{W}_k \, \hat{\gamma}_k \Big/ \sum_{k=1}^{3} \hat{W}_k$$

and

$$U_o' = \sum_{k=1}^{3} \frac{(\hat{\gamma}_k - \hat{\gamma}_o)^2}{\mathrm{var}\,(\hat{\gamma}_k)} = \sum_{k=1}^{3} \hat{W}_k \, (\hat{\gamma}_k - \hat{\gamma}_o)^2$$

For this example it should be mentioned that U_o' and Goodman's Y^2 are identical test statistics. Computations for the test are summarized in Table Three. For this example

$$\hat{\gamma}_o = \frac{6.7599\,(.27205) + 6.9686\,(-2.17742) + 5.7425\,(-2.46637)}{6.7599 + 6.9686 + 5.7425} = -1.41224$$

and

$$U_o' = 6.7599\,(.27205 + 1.41224)^2 + 6.9686\,(-2.17142 + 1.41224)^2$$
$$+ 5.7425\,(-2.46637 + 1.41224)^2 = 29.64$$

Since three contingency tables are being compared, U_o' is asymptotically Chi-square with two degrees of freedom if H_o is true. For $\alpha = .05$, Chi-square equals 5.99, and as a result, H_o is rejected. The general form of the $(1 - \alpha)\%$ set of simultaneous confidence intervals is given by

$$(\hat{\gamma}_{k_1} - \hat{\gamma}_{k_2}) \pm \sqrt{X^2_{k-1}\,(1 - \alpha)}\ \sqrt{\mathrm{var}\,(\hat{\gamma}_{k_1}) + \mathrm{var}\,(\hat{\gamma}_{k_2})}$$

for this example, $\sqrt{X^2_{k-1}\,(1 - \alpha)} = \sqrt{X^2_2\,(.95)} = \sqrt{5.99} = 2.45$

Of the three listed contrasts, two are significant.

$1.1283 < \gamma_1 - \gamma_2 < 3.7707$ Significant

$1.3495 < \gamma_1 - \gamma_3 < 4.1273$ Significant

$-1.0916 < \gamma_2 - \gamma_3 < 1.6695$ Not Significant

Table Three

Computations for Example Three

Age Level	1. Low		2. Medium		3. High	
Race	1. Wh.	2. NonWh.	1. Wh.	2. NonWh.	1. Wh.	2. NonWh.
Number Agreeing	134	35	102	75	59	40
Number Disagreeing	35	12	108	9	139	8
N_{ki}	169	47	210	84	198	48
$\hat{\gamma}_k$	.27205		-2.17742		-2.46673	
var $(\hat{\gamma}_k)$	.14793		.14350		.17414	
$\hat{W}_k$	6.7599		6.9686		5.7425	

These results indicate that the interaction measure for the youngest age group differs from that for the two older age groups. Within the youngest age group agreement with the question is the same for both races, but with the higher ages the non-whites support the question more than the whites.

Example Four

Multiple Comparisons Among the Parameters of K Independent Normal Populations--Equality of Variances not Assumed

This example with K = 3 is from the Ph. D. dissertation of Dr. William Rohwer. For this study, 96 sixth-grade Ss were assigned to three experimental conditions. Ss were expected to learn a list of eight pairs of high-frequency nouns. The two nouns in each pair were connected either by a conjunction, a verb, or a preposition. One measure of learning was the number of correct responses in six trials. The results are summarized in Table Four. The hypothesis to be tested is the usual one-way analysis of variance hypothesis

$$H_o: \mu_1 = \mu_2 = \mu_3 = \mu_o$$

against the alternative hypothesis that H_o is false.

To test the hypothesis, let $\hat{\theta}_k = \bar{x}_k$. For any value of N_k, it is shown in most elementary statistics textbooks that

$$\theta_k = E(\hat{\theta}_k) = E(\bar{x}_k) = \mu_k$$

$$\text{Var}(\hat{\theta}_k) = \text{Var}(\bar{x}_k) = \sigma_k^2 / N_k$$

With this transformation and the estimated variances

$$U'_o = \sum_{k=1}^{3} \frac{(\bar{x}_k - \bar{x}_o)^2}{\text{var}(\bar{x}_k)} = \sum_{k=1}^{3} \frac{N_k}{S_k^2} (\bar{x}_k - \bar{x}_o)^2 = \sum_{k=1}^{3} \hat{W}_k (\bar{x}_k - \bar{x}_o)^2$$

where

$$\bar{x}_o = \sum_{k=1}^{3} \hat{W}_k \bar{x}_k \Big/ \sum_{k=1}^{3} \hat{W}_k .$$

Computations for the test are summarized in Table Four.

For this example

$$\bar{x}_o = \frac{.2921\ (20.22) + .2902\ (26.84) + .2112\ (28.46)}{.2921 + .2902 + .2112} = 24.83$$

and

$$U'_o = .2921\ (20.22 - 24.83)^2 + .2902\ (26.84 - 24.83)^2 + .2112\ (28.46 - 24.83)^2 = 10.16$$

Since three experimental conditions are being compared, U'_o is asymptotically Chi-square with two degrees of freedom if H_o is true. For $\alpha = .05$, Chi-square equals 5.99 and as a result, H_o is rejected. The general form of the $(1 - \alpha)\%$ set of simultaneous confidence intervals about the contrasts is given by

$$(\bar{x}_{k_1} - \bar{x}_{k_2}) \pm \sqrt{\chi^2_{K-1}\ (1 - \alpha)}\ \sqrt{\frac{S^2_{k_1}}{N_{k_1}} + \frac{S^2_{k_2}}{N_{k_2}}}$$

The contrasts are listed

$-.21 < \mu_1 - \mu_2 < -13.02$ Significant
$-15.25 < \mu_1 - \mu_3 < -1.25$ Significant
$-8.62 < \mu_2 - \mu_3 < 5.38$ Not Significant

Since the N's are equal and the variances are essentially the same, the F-test would normally be used. For this example, F = 4.93. The result is significant with $\alpha = .05$ since $F_{2,93}\ (.95) = 3.11$. According to the Scheffé method of multiple contrasts one simple difference is significant. The contrasts based on the Scheffé method are listed.

$.32 < \mu_1 - \mu_2 < -13.56$ Not Significant
$-15.18 < \mu_1 - \mu_3 < -1.30$ Significant
$-8.56 < \mu_2 - \mu_3 < 5.32$ Not Significant

Comparing these intervals with those based on the Chi-square distribution it is seen that the two sets are essentially the same. However, while the difference

Table Four

Computations for Example Four

Noun Connection	1. Conjunction	2. Preposition	3. Verb
$\bar{x}_k$	20.22	26.84	28.46
N_k	32	32	32
S_k^2	109.56	110.28	151.54
var $(\bar{x}_k)$	3.42	3.45	4.74
$\hat{W}_k$	.2921	.2902	.2112

between μ_1 and μ_2 is not significant with the Scheffé method, this difference is significant with the large sample Chi-square intervals. The reason for this is that the sample variances S_1^2 and S_2^2 are both less than the Mean Square Error (123.79) which is used in the Scheffé intervals.

Note that for this example, the large sample Chi-square coefficient is equal to $\sqrt{X_2^2\,(.95)} = 2.45$ while the corresponding coefficient for the Scheffé intervals is given by

$$\sqrt{2F_{2,93}\,(.95)} = \sqrt{2(3.11)} = 2.49.$$

This near equality in coefficients is not surprising since

$$(K - 1)\ F_{K-1,\infty} = X_{K-1}^2$$

It should be mentioned that U_o' is amenable to small samples with unequal variances and unequal sample sizes. For this U_o' is multiplied by a constant and a new set of degrees of freedom must be calculated. Since the sample sizes are large and the variances are nearly equal, such a correction is not needed. For this example, the correction would reduce U_o' to 10.05 with no change in the final decision. This correction procedure is described in considerable detail by C. C. Li, pages 436-438. Interested readers may refer to it.

Example Five

Multiple Comparisons Among the Differences Between K Sets of Paired Normal Populations--Analysis of Variance Interaction Test for a 2 x K Design, Equality of Variances not Assumed

This example with K = 3 is from the same study as Example Four. In addition to varying the parts of speech between the paired associates, the learning materials were presented in normal English syntax ordering for one-half of the Ss, while the remaining Ss the normal English syntax ordering was scrambled. The results are summarized in Table Five. The hypothesis to be tested is the usual analysis of variance hypothesis that the two factor interactions are all zero. The statistical hypothesis is

$$H_o: (\mu_{11} - \mu_{12}) = (\mu_{21} - \mu_{22}) = (\mu_{31} - \mu_{32}) = (\mu_1 - \mu_2)$$

with the alternative hypothesis being that H_o is false. To test this hypothesis, let $\hat{\theta}_k = \bar{x}_{k1} - \bar{x}_{k2} = \hat{d}_k$. As shown in most elementary statistics textbooks

$$\theta_k = E(\hat{d}_k) = E(\bar{x}_{k1} - \bar{x}_{k2}) = \mu_{k1} - \mu_{k2}$$

$$\mathrm{Var}(\hat{\theta}_k) = \mathrm{Var}(\bar{x}_{k1} - \bar{x}_{k2}) = \frac{\sigma^2_{k1}}{N_{k1}} + \frac{\sigma^2_{k2}}{N_{k2}}$$

With this transformation and the estimated variances

$$U_o' = \sum_{k=1}^{3} \frac{(\hat{d}_k - \hat{d}_o)^2}{\mathrm{var}\,(d_k)} = \sum_{k=1}^{3} \hat{W}_k (\hat{d}_k - \hat{d}_o)^2$$

with

$$\hat{d}_o = \sum_{k=1}^{3} \hat{W}_k \hat{d}_k \Big/ \sum_{k=1}^{3} \hat{W}_k$$

Computations for this test are summarized in Table Five.

For this example

$$\hat{d}_o = \frac{.0763\ (4.32) + .0930\ (9.81) + .0891\ (15.69)}{.0763 + .0930 + .0891} = 10.22$$

and

$$U_o' = .0763\ (4.32 - 10.22)^2 + .0930\ (9.81 - 10.22)^2$$
$$+ .0891\ (15.69 - 10.22)^2 = 5.34$$

Since three sets of mean differences are being compared, U_o' is asymptotically Chi-square with two degrees of freedom if H_o is true. In order to compare the confidence intervals with the Scheffé intervals let $\alpha = .10$. For $\alpha = .10$, Chi-square equals 4.60, and as a result, H_o is rejected. The general form of the set of simultaneous confidence intervals about the contrasts is given by

$$(\hat{d}_{k1} - \hat{d}_{k2}) \pm \sqrt{\chi^2_{K-1}\,(1 - \alpha)}\ \sqrt{\mathrm{var}\,(\hat{d}_{k1} + \mathrm{var}\,(\hat{d}_{k2})}$$

The contrasts are listed,

Table Five

Computations for Example Five

Noun Connection	1. Conjunction		2. Preposition		3. Verb	
Syntax Level	1. Normal	2. Scrambled	1. Normal	2. Scrambled	1. Normal	2. Scrambled
$\bar{x}_{ki}$	22.38	18.06	31.75	21.94	36.31	20.62
S^2_{ki}	132.71	77.09	103.02	68.89	96.43	82.99
N_{ki}	16	16	16	16	16	16
var $(\bar{x}_{ki})$	8.29	4.82	6.44	4.31	6.03	5.19
$\hat{d}_k$	4.32		9.81		15.69	
var $(\hat{d}_k)$	13.11		10.75		11.22	
$\hat{W}_k$	.0763		.0930		.0891	

$-15.99 < (\mu_{11} - \mu_{12}) - (\mu_{21} - \mu_{22}) < 5.01$ Not Significant

$-21.97 < (\mu_{11} - \mu_{12}) - (\mu_{31} - \mu_{32}) < -.77$ Significant

$-15.98 < (\mu_{21} - \mu_{22}) - (\mu_{31} - \mu_{32}) < 4.22$ Not Significant

Since the N's are equal and the variances are essentially the same, the F-test would normally be used. For this example $F = 2.77$. The difference is significant with $\alpha = .10$, since $F_{2,90}(.90) = 2.37$. According to the Scheffé method of multiple contrasts the interaction term involving the conjunctions and verbs is statistically significant. The contrasts based on the Scheffé method are listed.

$-16.01 < (\mu_{11} - \mu_{12}) - (\mu_{21} - \mu_{22}) < 5.03$ Not Significant

$-21.89 < (\mu_{11} - \mu_{12}) - (\mu_{31} - \mu_{32}) < -.85$ Significant

$-16.40 < (\mu_{21} - \mu_{22}) - (\mu_{31} - \mu_{32}) < 4.64$ Not Significant

If the conditions for the analysis of variance model are not satisfied, then it is recommended that the proposed procedures be used. As to whether or not the adjustments of C. C. Li apply to the small sample counterpart of this example with unequal variances is not known for sure to the author. However, one would think that the adjustments would be applicable.

Note that for this example, the large sample Chi-square coefficient is equal to $\sqrt{X_2^2(.90)} = \sqrt{4.60} = 2.14$ while the corresponding coefficient for the Scheffé intervals is given by

$$\sqrt{2F_{2,90}(.90)} = \sqrt{2(2.37)} = 2.18.$$

Again the coefficients are nearly equal because the F-distribution divided by its numerator degrees of freedom converges to the Chi-square distribution as the denominator degrees of freedom increases.

Clearly, these examples do not exhaust all the possibilities that may arise in practice. The only requirements for the application of these techniques are large independent random samples with efficient estimates for the parameters. Large sample theory guarantees that their joint density will be multivariate normal so that both the test statistic and the simultaneous confidence intervals may be employed with any confidence coefficient that one might use.

Derivation of the Test Statistic

Consider K independent random variables X_k with probability distributions $f\ (x_k, \Theta_k)$, $k = 1, 2, 3, \ldots, K$, from which independent random samples of sizes $N_1, N_2, \ldots, N_K$ (all large) have been selected. Let $\hat{\Theta}_1, \hat{\Theta}_2, \ldots, \hat{\Theta}_K$ be a set of independent asymptotically normally distributed estimators for these parameters. It is known from large sample theory that their joint density function has an asymptotic Chi-square distribution with K degrees of freedom since it is the exponent in the asymptotic K-variate normal distribution of $\hat{\Theta}_1, \hat{\Theta}_2, \ldots, \hat{\Theta}_K$. (See Mood and Graybill, p. 264.)

Since the probability distributions are statistically independent $\mathrm{Cov}\ (\hat{\Theta}_{k_1}, \hat{\Theta}_{k_2}) = 0$ for $k_1 \neq k_2$. As a result

$$U = \sum_{k=1}^{K} \frac{(\hat{\Theta}_k - \Theta_k)^2}{\mathrm{Var}\ (\hat{\Theta}_k)}$$

To test the hypothesis

$$H_o: \Theta_1 = \Theta_2 = \ldots = \Theta_K = \Theta_o$$

it is only necessary to evaluate U under H_o and determine whether or not $U > \chi^2_K\ (1 - \alpha)$. If U is too large, H_o is rejected.

For most applications, the exact value of Θ_o is unknown and must be estimated. An easy to obtain estimate is the one that minimizes U. This estimate is given by

$$\hat{\hat{\Theta}}_o = \sum_{k=1}^{K} \frac{1}{\mathrm{Var}\ (\hat{\Theta}_k)}\ \hat{\Theta}_k \Big/ \sum_{k=1}^{K} \frac{1}{\mathrm{Var}\ (\hat{\Theta}_k)} = \sum_{k=1}^{K} W_k\, \hat{\Theta}_k \Big/ \sum_{k=1}^{K} W_k$$

If this estimate is substituted into U and if the resulting expression is denoted as U_o, it follows that

$$U_o = \sum_{k=1}^{K} \frac{(\hat{\Theta}_k - \hat{\hat{\Theta}}_o)^2}{\mathrm{Var}\ (\hat{\Theta}_k)} = \sum_{k=1}^{K} W_k\ (\hat{\Theta}_k - \hat{\hat{\Theta}}_o)^2$$

where $W_k = (\mathrm{Var}\ (\hat{\Theta}_k))^{-1}$. Employing familiar analysis of variance methods it is easy to show that U_o is asymptotically Chi-square with $(K - 1)$ degrees of freedom. To show this, add and subtract $\hat{\hat{\Theta}}_o$ in U and expand the resulting binomial. This gives

$$U = \sum_{k=1}^{K} W_k \left[(\hat{\Theta}_k - \hat{\hat{\Theta}}_o) + (\hat{\hat{\Theta}}_o - \Theta_o) \right]^2$$

$$= \sum_{k=1}^{K} W_k (\hat{\Theta}_k - \hat{\hat{\Theta}}_o)^2 + (\hat{\hat{\Theta}}_o - \Theta_o)^2 \sum_{k=1}^{K} W_k$$

$$= U_o + U_1$$

It is easy to show that the

$$\mathrm{Var}\ (\hat{\hat{\Theta}}_o) = \left[\frac{1}{\sum_{k=1}^{K} W_k} \right]^2 \sum_{k=1}^{K} W_k^2 \left(\frac{1}{W_k} \right) = \frac{1}{\sum_{k=1}^{K} W_k}$$

and as a result

$$U_1 = (\hat{\hat{\Theta}}_o - \Theta_o)^2 \sum_{k=1}^{K} W_k = \frac{(\hat{\hat{\Theta}}_o - \Theta_o)^2}{\mathrm{Var}\ (\hat{\hat{\Theta}}_o)}$$

Since U_1 is the square of a variable with an expectation of zero and a variance of one, it has an asymptotic Chi-square distribution with one degree of freedom. In the limit, U_o and U_1 are asymptotically independent and because of the additive property of the Chi-square distribution, U_1 is asymptotic Chi-square with $(K - 1)$ degrees of freedom. Therefore, a simple decision rule that may be used for testing H_o is to reject H_o if $U_o > X^2_{K-1}\ (1 - \alpha)$ and to not reject H_o if $U_o < X^2_{K-1}\ (1 - \alpha)$.

If the variances are unknown and the sample sizes are large one can substitute the large sample estimates of the variances into the final result with little loss. This also applies to the estimate of $\hat{\hat{\Theta}}_o$ which would then be equal to

$$\hat{\Theta}_o = \sum_{k=1}^{K} \frac{1}{\text{var}\,(\hat{\Theta}_k)}\, \hat{\Theta}_k \Bigg/ \sum_{k=1}^{K} \frac{1}{\text{var}\,(\hat{\Theta}_k)} = \sum_{k=1}^{K} \hat{W}_k\, \hat{\Theta}_k \Bigg/ \sum_{k=1}^{K} \hat{W}_k$$

In addition, the test statistic would be

$$U_o' = \sum_{k=1}^{K} \hat{W}_k\, (\hat{\Theta}_k - \hat{\Theta}_o)^2 .$$

A particularly interesting set of contrasts is the following $\binom{K}{2}$ contrasts

$$\psi_1 = (\Theta_1 - \Theta_2),\ \psi_2 = (\Theta_1 - \Theta_3),\ \ldots,\ \psi_{\frac{K(K-1)}{2}} = (\Theta_K - \Theta_{K-1})$$

A $(1 - \alpha)\%$ confidence set for these differences is

$$(\hat{\Theta}_{k_1} - \hat{\Theta}_{k_2}) \pm \sqrt{X^2_{K-1}\,(1 - \alpha)}\ \sqrt{\text{var}\,(\hat{\Theta}_{k_1}) + \text{var}\,(\hat{\Theta}_{k_2})}$$

Note that if $K = 2$, $\sqrt{X^2_1\,(1 - \alpha)} = Z_{(1-\alpha/2)}$ where Z is $N\,(o,1)$ and one obtains the well known

$$(\hat{\Theta}_1 - \hat{\Theta}_2) \pm Z_{(1-\alpha/2)}\ \sqrt{\text{var}\,(\hat{\Theta}_1) + \text{var}\,(\hat{\Theta}_2)}$$

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Appendix C

A Northern Urban Community's Attitudes Toward Racial Imbalances in Schools and Classrooms[1]

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1. INTRODUCTION

The present civil rights movement and the large migration of lower class Negroes out of the rural South have provided Northern urban public schools with two extremely difficult problems in education and socialization. The problems are to improve the education of Negro students and to assist the integration of Negro youth into the mainstream of contemporary American city life. Solutions for both of these problems are difficult to initiate and maintain since discriminatory real estate practices and the normal tendency for persons of similar background to live in close proximity have caused certain schools to become de facto segregated.

While it may not be stated with any high degree of assurance, it would appear that Negro assimilation will be less successful if their education takes place in de facto segregated schools. The reasons for this assumption are [2] many. Generally, de facto segregated schools are located in the older and less desirable sections of large central cities. The schools frequently were built to serve educational needs that differ in many ways from the educational requirements of a modern industrial technical society undergoing rapid changes. Frequently, teachers in de facto segregated schools lack the understanding needed for the teaching of lower class students and usually they are ill-prepared to teach the unmotivated Negro and white youth who attend their classes. Often much of the teacher's time is wasted on discipline with the result that both teachers and students are frequently dissatisfied with one another. Understandably, the quality of teaching and the morale of teachers and students in de facto segregated schools is low. To alleviate or improve these conditions, it would seem that the first major step the schools must take is to desegregate the schools and to aim for a reasonable racial balance among the students.

Unfortunately, school integration does not necessarily mean better education for either Negro or white youth nor does it guarantee integration of the students in the classrooms. This is especially true in school districts using ability groupings or curriculum tracks. All too frequently, the high ability classes are composed almost exclusively of white students, taught by dedicated and experienced teachers, in classrooms with adequate teaching facilities. On the other hand, low ability classes are composed almost exclusively of Negro students, taught by less experienced teachers, in classrooms with inefficient teaching facilities. While teachers and school administrators are very familiar with these conditions, the lay public is not; or else if the lay public does know, then it believes that these conditions do not necessarily hinder the education and assimilation of Negro youth.

The results of a recent mail survey, directed by the author and serving as the basis of this report, suggest that the public, is, indeed, unaware of these conditions or of the existence of any problem. While most of the respondents to the survey indicated they would support administrative programs to correct racial imbalances in the schools, they made it quite clear they would not support programs designed to correct racial imbalances in the classrooms. This apparent inconsistency in behavior and some of the variables related to its expression are examined in this paper.

2. HISTORICAL BACKGROUND PRIOR TO THE SURVEY

The decision of the United States Supreme Court of May 17, 1954, that equal and separate schools for Negroes and whites were no longer acceptable, was, in many respects, the most significant ruling relating to education passed by the court in recent years. One interpretation of that decision has immediate social and political realities for communities in which de facto segregation of the public schools exists. In essence, this interpretation suggests that de facto segregated schools are unequal and unacceptable, and as a result, they must be desegregated.

With this interpretation, the Board of Education of Berkeley, California, in the fall of 1962 selected a committee of 36 citizens to make a study of de facto segregation in their public schools and to determine the effect that it had upon the education of all of Berkeley's children. The findings and recommendations of the committee were published in November, 1963, in a report entitled De Facto Segregation in the Berkeley Public Schools. The report was distributed throughout the community to interested individuals, and the local newspaper, The Berkeley Gazette, reproduced the report in its entirety. The Board of Education studied the report and announced that at the regular Board meeting of May 19, 1964, it would make public its programs to reduce racial imbalances in schools and classrooms.

Soon after the report was circulated, it became apparent that a closely knit group of citizens in the community disagreed with the recommendations of the report, and its members proceeded to make their opposition known through various civic organizations and the local newspaper. As would be expected, citizens who supported the recommendations made in the report organized, and in a short time the community was divided into two active vocal groups of citizens.

Since the report had been written by citizens specifically chosen by the Board of Education, the opponents argued that the report was biased, and that the recommendations did not represent the attitudes of the general citizens of the community. Citizens supporting the recommendations disagreed. Since both groups were composed, for the most part, of upper socio-economic status whites, it could not be concluded that the opinions of the "average citizen" of the community were being heard or expressed. Therefore an opinion survey was conducted to determine what the "average citizen" thought about the recommendations. By the time the survey questionnaires were mailed to the public, many members of the community were politically, socially, and emotionally committed to one side or the other.

3. THE SURVEY DESIGN

As a statistical convenience, the city was stratified by census tracts. Within each census tract a 2 percent sample of adults was selected. The sampling procedure used within a census tract was as follows: on the basis of the 1960 census reports, a city block was chosen at random with probabilities proportional to block size. Within a selected block, a simple random sample of six households was made. A second block was then chosen and a simple random sample of six households was taken. The process was repeated until the number of adults in the sample was estimated to equal 2 percent of the 1960 census tract adult population. This procedure was repeated for each of the 28 census tracts in Berkeley. Since the population sizes varied across census tracts, the sample sizes over census tracts ranged from 25 to 86 adults. Since some of the questionnaires were mailed to empty households or wrong addresses, the actual sampling fraction was reduced to 1.88 percent so that the initial sample consisted of 1,392 adults. However, information was obtained from only 971 of the originally selected sample.

The survey was begun on April 15, 1964, with the mailing of letters and questionnaires to the 742 randomly selected households in the community. On April 29, follow-up letters were mailed to all nonrespondents. Between May 11 and 19, a random sample of the nonrespondents was interviewed by trained female personnel from the Survey Research Center of the University of California. The survey was terminated on May 19, the evening the Board of Education announced its decisions to the community.

4. RESULTS

A complete analysis of the responses to the questionnaire would require comparison of the responses to the original questionnaire, to the follow-up letter, and to the interviews. This analysis has been made, but is not reported here because the response patterns were essentially the same across these three response groups.

Two separate statistical analyses were conducted to determine the relationship between some demographic and socio-economic variables and the kinds of responses. One is based upon easy to obtain public information. The other is related to responses made to some of the items appearing on the mailed questionnaires. Both analyses use non-parametric methods. Confidence intervals based upon a Chi-square analog of Scheffé's theorem have been used to determine the significant sources of variation whenever a tested hypothesis was rejected. In addition, all statistical tests were conducted with a probability of a type one error equal to .01.

Reduction of Racial Imbalances of Neighborhood Schools by Changing School Boundaries.

The questionnaire contained 22 items. One related to the correction of racial imbalances in the neighborhood elementary schools and read as follows:

For some grade schools, the committee suggested that lines be changed so that the percentage of nonwhite and white children in these schools would be more like the percentage for the entire school system.

I agree_____ I disagree ________ I am not sure_______

Excluding the "I am not sure" category, an unbiased estimate of the proportion of adults in the community supporting the recommendation was 64 percent. However, if the "I am not sure" responses are classified with the "I disagree" responses, then the percentage is reduced to 51 percent. Because of the large differentials in race and socio-economic levels throughout the community, one would expect this percentage to show large variability across the 28 census tracts used as strata in the sampling, and, indeed, this is the case. In the tract representing the highest socio-economic level in the community the proportion agreeing to the proposition was only 13.3 percent. At the other extreme in the tract with the lowest SES indices, the proportion agreeing with the proposition was 100 percent.

Part I. Analysis Based on 1960 Census Reports and Recent Census Tract Voting Records.

On the basis of 1960 census data and recent local voting records, the 28 census tracts of the community were divided into three groups. The 9 census tracts having the lowest measures on any variable under study were classified as low on that variable; the next 10 were classified as medium, and the last 9 were classified as high. Separate classifications were used for each of the seven variables shown in Table 1.[3] As a result, a census tract treated as low in education need not be included in the low level for the other variables. This explains why the sample sizes vary across the levels of the variables listed in Table 1. The sample size for this analysis is equal to 770 and not 971 since the "I am not sure" category has been excluded.

Surprisingly, for a college and educationally oriented community such as Berkeley, the proportion agreeing to changes in the neighborhood elementary school boundaries to reduce the racial imbalances decreases with increases in education. In the tracts in which fewer than 50 percent of the adults have completed high school, 77.8 percent of the informants favor changing the school boundaries to bring about integration, while in the census tracts in which over 50 percent of the adults have completed college, only 47.1 percent favor the recommendation.

As Table 1 indicates, most of the opposition to changing the school boundaries is expressed by informants in the high level census tracts on each of the four variables which measure socio-economic status. In addition, as median years of education, median family income, and the percentage of whites in the census tracts increases, the proportion agreeing with the recommendation tends to decrease. The relationship between the percent agreeing with the recommendation and the percentage of homeowners in the tracts is not a monotonically decreasing function as it is with the other three SES variables. However, it is apparent that most of the support for the recommendation is centered among the

Table 1. Percent Agreement with the Recommendations to Change School Boundaries and to Reduce the Number of Ability Groupings by Three Levels of Some Demographic and Voting Variables

Variable		Amount of Agreement Shown to the Changing of School Boundaries			Amount of Agreement Shown to the Reduction of Number of Ability Groups		
Level	Median Value ^{a}	Percent	Sample Size	Value of X^2	Percent	Sample Size	Value of X^2
Median Years Education							
Low	11.0 years	77.8	216		67.8	205	
Medium	13.6 years	55.8	310	46.6*	31.5	321	110.4*
High	16.5 years	47.1	244		22.0	246	
Median Family Income							
Low	$5130	81.9	215		59.5	200	
Medium	$6420	59.0	300	95.0*	35.1	313	59.2*
High	$9730	40.4	255		25.1	259	
Percent Home-owners							
Low	17%	68.2	239		28.4	243	
Medium	47%	68.6	283	56.0*	54.5	279	49.6*
High	83%	39.9	248		29.2	250	
Percent white							
Low	47%	75.8	231		64.0	217	
Medium	90%	61.4	295	59.6*	27.4	306	85.2*
High	98%	41.0	244		28.5	249	

Table 1. (Continued)

Level	Median Value[a]	Percent	Sample Size	Value of X^2	Percent	Sample Size	Value of X^2
9 Median Adult Age							
Low	37.4 years	69.3	225	18.5*	29.8	228	10.9*
Medium	43.8 years	59.4	296		43.7	300	
High	50.5 years	49.8	249		38.9	244	
Percent Voting for sale of Elementary School Bonds							
Low	58.0%	58.1	217	1.6	48.4	217	23.4*
Medium	66.0%	62.1	293		40.6	286	
High	75.0%	56.9	260		27.1	269	
Percent Voting for Passage of Fair Community Housing Law							
Low	33.0%	47.6	267	32.2*	33.0	264	35.0*
Medium	43.0%	58.8	257		29.2	264	
High	67.0%	72.4	246		53.3	244	

* Differences are statistically significant at $p < .01$. The 99th percentile of Chi-square with 2 degrees of freedom is 9.2.

[a] According to 1960 census reports or voter registration records.

low and medium level tracts and that the high level tracts tend to be against the recommendation. In any case, it is clear that the general relationship for all four SES variables is the same.

It appears that the recent voting pattern for the sale of elementary school bonds had little relationship to attitudes to change school boundaries (Chi-square equals 1.6). This result suggests that attitudes relating to financial support of schools are independent of attitudes to integrate schools. In terms of the vote on the community fair housing law, the results are meaningful and interpretable. As the proportion voting in favor of the fair housing law increases, the percentage agreeing with the changing of the school boundaries to achieve integration increases.

The tracts that agreed most with the recommendation have low median years of education, low median family incomes, low percentages of whites, and high percentages of votes for the passage of the fair housing law. These, in essence, are the census tracts inhabited by the Negro population of the community.

Part II. Analysis Based on Items Appearing on the Questionnaire.

Whereas the previous discussion was dependent upon a collation of 1960 census and voting data with the responses of one item of the survey questionnaire, the following analysis is based upon other items appearing on the questionnaire itself. For this investigation, the same procedures were employed as were used for the census data. That is, the census tracts were ranked on the basis of the responses given by the informants. The nine tracts with the lowest level of the variable of interest were classified as low tracts; the next 10 were classified as medium level tracts; and the remaining 9 were classified as high level tracts. The results of this analysis are summarized in Table 2.

As the figures of Table 2 indicate, sex has no bearing upon whether or not the informant approved the changing of elementary school boundaries. The same is true for informants with no college and those with some college. Also, agreement with the recommendations appears to be independent of whether or not the respondents have relatives as students or employees in the school district. However, race, homeowner status, and voter registration status are clearly related to the type of responses given. In addition, the length of time lived in Berkeley and whether or not the respondents were educated in Berkeley's schools are clearly related to the responses. These findings suggest that newcomers to the community favor the integration. In Berkeley, newcomers are for the most part Negroes, students, or young people employed by the University of California.

A large number of two variable classifications were made and analyzed by Chi-square methods. From this analysis it was concluded that, next to race, the age of the informants was perhaps the variable most related to the proportion agreeing with the recommendation to change school boundaries. In Table 3 is shown the interaction of this variable with race, education, and homeownership. The low Chi-square values for the interaction test of age with education and homeownership status suggests that these variables do not interact with age. However, age and race show a significant interaction. Young whites (ages 21 - 30) support the recommendation to the same extent as the nonwhites of the same age. As age increases, the two races separate with respect

Table 2. Percent Agreement with the Recommendations to Change School Boundaries and to Reduce the The Number of Ability Groupings by Two Levels of Some Variables Reported on in the Survey Questionnaire

	Amount of Agreement Shown to the Changing of School Boundaries			Amount of Agreement Shown to the Reduction of Number of Ability Groups		
Variable and Level	Percent	Sample Size	Value of X^2	Percent	Sample Size	Value of X^2
Sex						
Male	57.1	354	.8	35.0	357	1.8
Female	60.0	408		40.0	408	
Race						
White	51.1	577	89.6*	25.4	582	190.7*
Nonwhite	83.8	179		76.6	171	
Education						
No College	58.4	231	.1	53.0	234	34.3*
Some College	59.6	523		30.5	524	
Homeowner Status						
Renter	74.1	355	74.8*	35.9	365	.6
Owner	44.6	395		38.7	398	
Registered Voter						
yes	54.4	629	23.8*	36.6	629	.9
No	76.4	144		41.1	146	

Table 2. (Continued)

Variable and Level	Percent	Sample Size	Value of X^2	Percent	Sample Size	Value of X^2
Relatives in Schools						
Yes	53.5	243	3.6	42.8	238	4.4
No	60.9	527		35.2	534	
Education in Community						
Yes	42.6	122	16.2*	34.4	119	.2
No	61.8	628		36.4	625	
Length of Time Lived in Community						
Under 6 years	78.8	274	89.8*	37.8	275	.1
6 years or more	47.1	488		36.9	488	

* Differences are statistically significant at $p < .01$. The 99th percentile of Chi-square with 1 degree of freedom is 6.64.

to their attitudes toward this recommendation, so that for ages over fifty, only 29.8 percent of the whites support the recommendation while 83.8 percent of the nonwhites support it.

Reduction of Racial Imbalances in the Classrooms by Changing Ability Grouping Procedures.

One of the questions related to the integration of the classrooms read as follows:

> Now Berkeley schools divide children into classes on the basis of how well they did in earlier classes. This sometimes leads to racial segregation in the classrooms. The committee suggest fewer "ability groupings" be used. This would cut down on segregation and would produce classes with children who have a larger range of ability.
>
> I agree ______ I disagree ______ I am not sure ______

The proportion of the respondents who favored this recommendation clearly shows that the public considers ability grouping as highly desirable and, in a certain sense, more valued than integrated classrooms. Thiry-eight percent of the respondents favored the proposition. If one excludes the "I am not sure" category, this percentage is increased to 47 percent. Just as with the recommendation concerning the changing of elementary school boundaries, these percentages showed wide variability across the 28 census tracts. The range was 3.4 percent to 98.2 percent.

Part III. Analysis Based on 1960 Census Reports and Recent Voting Records.

The results with respect to this recommendation are essentially the same as those noted for changing elementary school boundaries, except that the percentages are at a much lower level. (See Table 1.) The tracts that supported the recommendations are low in education, low in median family income, low in percent whites, and high in their vote for fair housing. As might be expected, this reflects the attitudes of the Negro portion of the community. It should be mentioned that the census tracts with low percentages of homeowners are not the Negro tracts of the community. Since Negroes are able to purchase homes in the tracts in which they are most numerous, they appear in the medium level for this variable. For this level more than 50 percent of the informants supported the recommendation to reduce the number of ability groupings. This result also agrees with the conclusion that support for the recommendation is most strongly expressed by the Negro members of the community.

Part IV. Analysis Based on Items Appearing on the Questionnaire.

The results of this analysis are summarized in Tables 3 and 4. Sex, homeownership status, voter registration status, education in the community's schools, and length of time lived in the community show little or no relationship to the responses concerning this recommendation. Informants with some college education were against the proposition while informants with relatives in the schools show a slight preference in favor of the recommendation, but this difference is not statistically significant. The characteristic most related to a favorable response to the recommendation was the race of the respondents. Among the nonwhites, 76.6 percent favored the reduction in the number of ability groupings while only 25.4 percent of the whites did. Informants with no college favored the proposition.

As can be seen in Table 5, the interaction between race and age, while not significant at p = .01, suggests that the young nonwhites show less favor with the recommendation than do their elders. Whites showed the same amount

Table 3. Percent Agreement to Changing School Boundaries with Respect to Race, Education and Homeowner Status of the Informants by Adult Ages

Variable	Sample Size for Age Group 21-30	31-49	50 and up	% Agreement for Age Group 21-30	31-49	50 and up	Value of X^2
Age	216	294	246	78.2	60.2	40.2	81.8*
Race							
White	169	210	198	79.3	48.6	29.8	41.6*
Nonwhite	47	84	48	74.5	89.3	83.8	
Education							
Some College	190	205	128	74.4	60.0	32.8	5.6
No College	26	92	113	84.6	58.7	52.2	
Homeowner Status							
Renter	181	116	58	80.7	75.0	51.7	1.7
Owner	32	178	185	62.5	48.9	37.3	

* Differences are statistically significant at $p < .01$. The 99th percentile of Chi-square with 2 degrees of freedom is 9.2.

Table 4. Percent Agreement to Reducing the Number of Ability Groups with Respect to Race, Education, and Homeowner Status of the Informants by Adult Age

Variable	Sample Sizes for Age Group			Percent Agreement for Age Group			Value of X^2
	21-30	31-49	50 and up	21-30	31-49	50 and up	
Age	218	294	253	30.7	44.5	34.8	11.1*
Race							
White	179	204	203	25.1	28.4	25.2	7.2
Nonwhite	39	86	50	56.4	82.6	82.0	
Education							
Some college	194	197	124	26.8	36.5	29.8	
No College	25	92	115	60.0	60.9	46.1	1.6
Homeowner Status							
Renter	186	110	67	26.9	50.0	38.8	11.4*
Owner	29	175	190	55.2	40.6	32.6	

* Differences are statistically significant at $p < .01$. The 99th percentile of Chi-square with 2 degrees of freedom is 9.2.

of disagreement with the proposition at all ages. College trained people were generally against the recommendation at all age levels. The significant interaction of age with homeownership status can be attributed to the young renters. For the most part, the young renters represented the graduate student population of Berkeley in attendance at the University of California. That they favor ability grouping is not surprising.

5. DISCUSSION

One implication of this study is that Northern school boards in districts similar to Berkeley can expect to have the general backing of the community for correcting racial imbalances in the schools, but they need not expect the backing of the community for eliminating or reducing the number of ability groupings to achieve racial imbalances in the classrooms. However, it does not follow that all members of the community support these conclusions. From this study, it appears that most of the opposition to desegregate schools was concentrated among the older, upper class, white members of the community, and in particular, among the adults who had been educated in the community's schools and who had continued to live in the community. Geographically, the opposition was localized in the census tracts representing the highest SES levels the community. Support for desegregation to correct racial imbalances was centered among Negroes, young adults, new residents of the community, and adults who had been educated outside of the community. The major support for the reduction or elimination of ability groupings came from the Negro citizens of the community. White adults at all socio-economic levels appear to be convinced that ability grouping is desirable for educating children and therefore its "good" characteristics are not worth losing, simply to bring about better racial balances in the classrooms.

Since the questionnaire contained no item relating to the socio-economic status of the respondents and interviewees, the decision that the opposition is primarily centered among the older, upper-class white citizens is based upon the statistical analysis presented in this paper and some general knowledge of the survey community.

In terms of the census tract data, the informants from the census tracts with high median years of education, high family income, high percentages of homeowners, high percentages of whites, and high median adult ages were, for the most part, against the changing of school boundaries and the reduction of ability groupings. In terms of the questionnaire information, opposition to the changing of school boundaries was shown by whites, homeowners, registered voters, people educated in the community's schools, and by people who have lived in the community over six years. Combining the inferences drawn from these two sets of information, it is reasonable to conclude that the opposition is centered among the older upper-class long term white residents of the community.

The informants from the census tracts with low and medium years of education, low and medium family incomes, low and medium percentage of homeowners, low and medium percentages of whites, and low and medium adult ages supported the changing of the school boundaries to bring about the integration of the schools. Except for the percentage of homeowners, informants in the tracts characterized as medium on these variables did not support the recommendation to change the ability grouping programs in the schools, and as a result, were in agreement with the older white upper class members of the community. In terms of questionnaire information, support for the reduction of ability grouping was shown by nonwhites and people with no college education. Combining these two sets of information it follows that the primary support for the reduction of ability grouping to bring about the integration of the classrooms was localized among the Negro members of the community.

There is a danger that one might interpret these results to mean that upper class whites are against school integration and that Negroes are against special education for some children. Neither conclusion is intended nor justified. At the time of the survey, the schools of Berkeley were legally integrated and for some subjects the number of ability groups exceeded ten. However, mainly because of real estate practices and the general inability of Negroes to afford the costs of living in other parts of the community, there were tremendous imbalances in the percentages of the races throughout the community's schools; and in the schools that had a large Negro enrollment, the top ability groups consisted primarily of white students. If the members of the sample had been asked if they favored integration or ability groupings for the education of their children, the probability is exceedingly high that the responses would have been in the affirmative for both whites and nonwhites across all socio-economic classes. But those were not the questions asked of the sample members. Instead they were asked whether or not school boundaries should be changed to improve the racial balance in the schools and whether or not the number of ability groupings should be reduced or eliminated to improve the racial balance in the classrooms. It is upon these points that the public differs.

It is perhaps true that many white adults were educated in schools that employed ability groupings; if not, it is likely that their children attend schools that use ability groupings. The real or assumed advantages have been experienced and are "known" to the parents. Many of them equate top ability groups with visits to museums and theaters, better jobs upon graduation, improved chances for admission and completion of a college education, better teaching facilities and equipment, more opportunities for individual attention for children, and special education in new math, science or reading programs. The absence of these favored programs are associated with low ability groups. In general, they believe that ability grouping has characteristics that will help produce the best possible education for their children.

Of course Negro parents also want the best possible education for their children. However, if Negro parents were educated in schools that used ability grouping or if their children are in low ability groups, they might reasonably consider ability grouping to be undesirable and unfair. They "know" that the educational advantages of being in the top tracks will not be extended to their children.

Low ability sections are generally less stimulating for children. Motivation to learn is almost nonexistent in low ability sections and teachers seem not to be able to do much to increase it. Certainly, children placed in low ability groups realize that they do not perform as well as their fellow classmates in the top ability groups. This alone should establish a defeatist attitude and as a consequence, this should further lower their performance.

Children certainly must realize that being placed in a low ability group carries with it the stigma of being considered less bright and less favored by teachers and parents. As suggested by Kenneth B. Clark, homogeneous grouping may create as many problems as school segregation. Furthermore, "Children who are stigmatized by being placed in classes designated as 'slow' or 'dull' or for 'children of retarded mental ability' cannot be expected to be stimulated and motivated to improve their academic performance."[4] Certainly parents interested in the education of their children also believe this.

Since ability grouping has been employed by schools for many years, one would suspect that most Negro adults have been educated under its operation, and as a result, it is not surprising that they should oppose it. However, even though the white public has also been educated under ability grouping programs, it appears to be unconcerned or little aware of the many psychological problems that children placed in low ability groups have to face. This lack of understanding is easy to illustrate by comments made by some of the respondents to the survey.

Each questionnaire contained two blank pages with an invitation to the respondents to make any additional comments they would like to have conveyed to the Board of Education. Many people took advantage of this opportunity to express their points of view. Some of the comments are reproduced here to illustrate some of the reasons given by the white public in opposing the recommendation to reduce the number of ability groupings.

1. ...fewer "ability groupings"--NO! NO! NO!
2. Homogeneous groupings is the only way.
3. I am all for ability groupings. If this sometimes leads to racial segregation, I regret this fact.
4. Brighter children should not be brought down to the level of achievement of less bright children...
5. The school's only problem is education. You have no choice but to

provide instruction to develop each student to the maximum of his ability. If this produces segregation, then segregation is mandatory.

6. Fewer ability groupings would, no doubt, cut down on segregation, but might also intimidate the best students and make it difficult to give the poorest students the special attention they need.

7. I am very much in favor of ability groupings. Eliminating those would neither benefit the slow nor the more advanced student. The latter would be left without challenge and the slow would have a very hard time to follow. Give special teaching to all children who need extra help--the integration will follow in time.

8. ...I do not believe that talented students should be limited in classwork by having to contend with slower students of less ability. I realize that because of existing segregation, many Negro students have a shaky scholastic background and as a result of ability groupings, classes might tend to become segregated. This poses a dilemma.

9. I strongly suggest that you forget about fewer "ability groupings." If our standards of education are based upon excellence and the furthering of those gifted children who can move faster than the pace set by our mediocre school systems, then let that be unaffected by race, creed, or religion. You do not help the cause of any group by lowering standards for them. At first the "whites" may be predominant in these special groupings, but since ability is irrespective of race, soon there would be a mixed group in any special ability... which reflects the relative percentage of races within the school system.

As these comments suggest, the public is very much in favor of ability groupings. A general belief seems to be that forced integration in the classrooms is not desirable and that the best solution for the problem of Negroes being congregated in the lower ability groups is to do nothing. This solution suggests that "time" will solve the problem, but how "time" will do this is not indicated. That adults adhere to this belief is somewhat naive, since past history shows that unaided "time" has a rather poor performance in the solution of social problems.

These comments also suggest that the public believes that the primary function of schools is to teach and that special instruction should be available for both the "gifted student" and the student with a "shaky scholastic background." However, according to the decision as delivered by Chief Justice Warren of the United States Supreme Court on May 17, 1954, "...education is perhaps the most important function of state and local governments...it is the very foundation of good citizenship. Today, it is a principal instrument in awakening the child to cultural values, in preparing him for later professional training, and in helping him to adjust normally to his environment."

Judging from the comments offered by the white public, it appears that the functions of the school as listed by the Chief Justice are not universally ascribed to, or if they are, the public forgot to mention them. Very few comments were made relating to the idea that integration and education had any bearing on good citizenship or that the nation would be better off because of integrated schools. The important position that the schools have in introducing children to the cultural values of contemporary life was thoroughly omitted. And finally, that the schools should contribute to the emotional and psychological life of the child was never mentioned. Perhaps if these other values had been brought to the attention of the respondents, the results might have been different. Schools do more than teach reading, 'riting, and 'rithmetic. But since the white public places so much emphasis on this function of the school, it is easy to see why they do not favor the reduction or elimination of ability groupings to integrate classrooms in integrated schools.

Footnotes

[1] The research reported herein was performed pursuant to a contract with the United States Office of Education, Department of Health, Education and Welfare, Contract Number OE-5-10--152. The author would like to thank Mr. Seong Soo Lee and Mr. Joel Levin for their assistance in preparation of the final statistics.

[2] For a more complete discussion of the reasons why de facto segregated schools are not conducive to good education and socialization see Education in Depressed Areas, A. Harry Passow, ed., Bureau of Publications, Teachers College, Columbia University, New York, 1963. In particular, see p. 6, Mel Ravitz, "The Role of the School in the Urban Setting," and p. 142, Kenneth B. Clark, "Educational Stimulation of Racially Disadvantaged Children."

[3] As the figures of Table 1 show, Berkeley is an unusual community in certain respects. Its members tend to be highly educated and tend to have above average wealth. Its median years of education, 13.6, is unusually high and its median family income, $6,420, is considerably above that of the nation as a whole.

[4] Clark, op. cit.